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NOTICE TO SUBSCRIBERS

Consequent on paper rationing, new subscribers in Great Britain cannot be accepted until further notice. Any applications will be put on a waiting list, and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions. Orders for overseas destinations can now be accepted

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind readers that there are still some overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit for such dispatch*

TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays 9.30 a.m. till 5.30 p.m.
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Government Controls of Finance and Industry

THE King's Speech did not add greatly to understanding of the economic aims of the Government, but it made it clear that it is intended to put to the test theories which supporters of the Party in office have long advocated. It seems clear that the nation is about to embark on a period of control, whether through the medium of nationalisation or otherwise. Nevertheless, in certain important directions, such as the cotton industry, private enterprise will be left to undertake the difficulties of reconstruction. The nationalisation of the Bank of England and the coal mining industry are to be the first steps in the Government's programme. So far as the former is concerned, it is connected so closely with the Treasury, and the whole monetary system is already so effectively directed from Whitehall, that it is a little difficult to understand what will be gained by socialisation of the central institution. It may be that the outcome will be an ever-increasing extension of State partnership in private industry, possibly as an alternative to complete nationalisation. For the nationalisation of the coal mining industry the best that can be said is that the need for securing a larger supply of coal at cheaper prices, and at an earlier moment than seems possible at present, is so urgent that any action, however drastic, which achieves this end, will be assured of a large measure of public support. The policy of the Government will be judged on its results.

* * * *

Preparing for Post-War Trade

The Board of Trade has made some modification in the restrictions applying to manufacturers who are desirous of undertaking preparatory work for post-war trade. Hitherto it has been necessary for manufacturers to make individual application to the Board of Trade, but in future it will not be necessary to obtain specific authority before undertaking preparatory development work. It will still be necessary, however, for firms to obtain licences for raw materials required for development work and also for actual manufacture when these materials are subject to control. It is pointed out that the demand for draughtsmen and certain other types of skilled workers for some time is likely to exceed available supply and that manufacturers should continue to do as much of their development work as possible with existing staff. If important development work is likely to be seriously retarded on account of staff shortage, vacancies for draughtsmen and other workers required should be notified to the Ministry of Labour & National Service. The supply of these workers will be dependent on the extent to which labour of this kind is required for other, priority work.

Railway Nationalisation May Be Delayed

The prices of home railway stocks recently have shown a fairly substantial recovery from the low levels they touched when the Labour Government was returned and investors feared that the nationalisation of railways might be among the earliest acts of the new administration. In the King's Speech, however, major emphasis was laid on the early nationalisation of the Bank of England and of the coal mines, and the London Stock Exchange appears to have made up its mind that if any such action is taken in the direction of transport, it will not be for some considerable time. Indeed, the general supposition now is that it would take approximately two years for any scheme of transport nationalisation to become effective, and during that time it is assumed that the present agreement would continue and that stockholders would receive the guaranteed rental. On the basis of this rental, of course, the yields on railway junior stocks are very attractive and this no doubt, coupled with the prospect of a continuance of payments at this level for two years to come, has led to a revival of buying in the market. As it is now widely recognised that all internal transport, including aviation, would have to be included in any scheme of nationalisation that had any prospect of achieving even reasonable success, it is likely that some time must elapse before it is introduced.

* * * *

Bank Holidays

Wartime travel conditions, more especially perhaps during the present year, have strengthened the argument for the staggering of the holiday season and for the spreading of it throughout the summer months. Since the introduction of national bank holidays under Lubbock's Bank Holidays Act, 1871, there has been a vast increase in the numbers of the population to whom holidays with pay are accorded. As we showed in our August 10 issue, at the present time some 15,000,000 insured workers are now operating under holidays-with-pay agreements, and the operation of holidays with pay is steadily increasing. From the point of view, therefore, of providing a break, bank holidays have lost their significance, but as great numbers of persons arrange their holidays immediately before a bank holiday, they add con-

siderably to the burden imposed on transport, and they hamper the spreading of holidays throughout the year. For the Good Friday at Easter and the Christmas bank holiday, a case may be made out on the grounds that they are connected with religious festivals, that they are not unduly close together, and that they occur at times of the year when a short break may be beneficial. The Whitsun and August holidays, however, occur when holidays in business houses are already in operation, and when the employees are deriving such benefit as is to be gained from the operation of daylight saving, shorter hours of work, and so forth, which did not apply in Lubbock's time.

* * * *

Nitrate Railways' Position

According to the statement issued by the Chairman of the Nitrate Railways Co. Ltd. (Mr. Patrick L. Fleming) with the report for the year 1944, the future of the company is still undecided. An expropriation decree was issued by the Chilean Government in 1941 which provided that the valuation of the property should be determined by a Commission of assessors and that Congress should be asked to approve a Bill to provide for compensation to the company. The matter has not yet been submitted to Congress. Meanwhile the company, under an agreement with the Government, is continuing to operate the entire system of 382 miles. Shipment of nitrate from Tarapaca was 329,000 tons in 1944, compared with 261,000 in 1943; and the company carried 163,000 tons, against 158,000, with receipts from nitrate traffic, etc., of £97,725, against £83,934. The new plant at oficina Victoria is now working and has an annual capacity of 200,000 tons. Although the gross receipts of £196,668 were £26,486 higher, the working expenses of £244,855 showed an increase of £27,282, leaving a loss on working of £48,190. Fuel cost the company in 1944 about £45,000 more than it would have cost in 1939, and the bill for wages and salaries has also gone up by about £40,000 in the same period, in spite of the employment of fewer men. Materials are either more expensive, or of inferior quality. The difficulty of getting tariffs sufficiently raised is that the Government owns and subsidises a competing railway and is financially interested in the sale of the nitrate carried. Furthermore, the Government has under consideration the purchase of the railway at present owned by the company.

* * * *

Rhodesia Railways' Results

Although the gross revenue of Rhodesia Railways Limited for the year ended September 30, 1944, was higher by £319,675, or 5·1 per cent., than that for the previous year, working expenditure increased by £411,057, or 11·4 per cent., so that the surplus on working was £91,382 lower. The increase in expenditure was partly due to the increase in traffic, as the tonnage handled was 4·1 per cent. higher than that of the previous year, itself a record for the system up to that time, and partly to the general rise in cost of labour and materials. In the operating ratio there was a rise from 58 per cent. to 61·4 per cent.

	1942-43	1943-44
	£	£
Passenger revenue	842,945	928,525
Goods revenue	4,981,379	5,203,558
Road motor services	90,031	100,722
Gross revenue	6,241,368	6,561,043
Working expenditure	3,617,896	4,028,953
Surplus on working	2,623,472	2,532,090

Provision for depreciation and renewals is included in the working expenditure. The net revenue account shows that after providing for all charges, including debenture stock service, there was a profit of £489,025, compared with £555,604 for 1942-43. In accordance with legislation, £125,000 goes to dividend account, enabling 25 per cent. to be paid, and £364,025 is placed to rates stabilisation account.

* * * *

Central Uruguay Railway Tariffs

The generally sympathetic attitude of the Uruguayan Government towards the Central Uruguay Railway Company of Monte Video makes it difficult to understand the statements attributed to Senor Tomes Barretta, the Minister of Public Works, in the course of a recent interview. "Any law," he is reported to have said, "which permits the Uruguayan Government to intervene regarding railway tariffs can never be opposed to the logical interest which capital has the right to receive. . . . The Government will never act contrary to the engagements and obligations which are derived from Government-contracted interests but the situation of producers and all who contribute to the progress of transport must be cared for." He went on to state that the pegging of tariffs would not be directed only to the Central Uruguay Railway, but would affect equally all transport in the country. In connection with this statement the directors of the company have pointed out that according to the company's concession and under the Railway Law the State only has the right to intervene in fixing tariffs when the railway earns 12 per cent. on its capital. The message from the Minister of Public Works comes while the commission which is now studying the relationship between the Government and the railway is still sitting and before it has reported to the Government. Moreover, no approach has been made to the company as to terms on which it would be willing to surrender its freedom to fix tariffs. It seems clear that events in Uruguay, so far as the railway is concerned, are entering a phase which may call for careful survey. The report of the Commission obviously assumes increased importance.

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The Future of the Luxembourg Railways

Since the taking over by the Luxembourg State Administration under a Grand-Ducal Decree of the operation of all standard-gauge and narrow-gauge railways in Luxembourg (to which we made reference in our August 3 issue, page 106) it has been announced that this is a temporary measure pending the re-organisation of the country's railway system. Negotiations are now in progress between the interested parties, namely, the two main-line railway companies, the Belgian and the French railways, and the Luxembourg State Administration, with a view to forming a Luxembourg national railway company, for which the name of the Société Nationale des Chemins de Fer Luxembourgeois has been proposed. The capital of the new company would be subscribed by the Luxembourg State Administration to the extent of 51 per cent., and by the Société Nationale des Chemins de Fer Belges and the Société Nationale des Chemins de Fer Francais to the extent of 24½ per cent. each. The Luxembourg railway system, the first line of which was opened in 1859, had a route length of 332 miles before the war, of which 86 miles were owned by the State. The two main-line companies are the Prince Henri Railway and the Guillaume-Luxembourg Railway; the vicissitudes of which during the earlier part of the war were described in *The Railway Gazette* for October 23, 1942, page 405.

* * * *

Pile Bridging at Breaches

The article elsewhere in this issue, describing a rapid method of restoring traffic interrupted by big breaches in railway embankments, discloses no little ingenuity on the part of the bridge staff of the North Western Railway, India. The hastily-improvised pendulum-piling pontoon—fabricated from whatever material happened to be handy—was completed within five days of pencil first being put to paper for its design. The guide frame for keeping the piles vertical against current velocities up to 11 f.p.s. and cantilever frame, bolted to the crane, were also useful innovations. The decision to leave the track hanging in festoons across the breaches, instead of cutting it and letting it lie on the bed, was prompted by the facts (1) that it was better to have the rails and sleepers in known positions where they could be avoided, than on the bottom in the way of the piling in up to 30 ft. of water, and (2) that in suspension they formed a convenient staging for the men working round the piles. The track was lifted piecemeal by the crane when the piling was ready for the girders to be slipped into position beneath the track. Incidentally, the work in repairing these breaches proved invaluable training for the labour required during the next year to help out the East Indian Railway in repairing its more serious breaches near Burdwan, described in *The Railway Gazette* of February 11, 1944. It will be remembered that on that occasion the N.W.R. bridge staff, 100 men strong, completed 70 30-ft. spans—by driving 641 piles with this same equipment—in two months.

* * * *

New 2-6-4 Tank Engines. L.M.S.R.

It is easier to design a massive locomotive than a light one for a given duty; and for that reason Mr. Fairburn's new tank engines on the L.M.S.R. are of especial interest, as exemplifying what can be done in the saving of weight, when the need to do so becomes sufficiently pressing. Apart from this, they are also the first new type to appear during Mr. Fairburn's tenure of office; and although not strictly a fresh design (as they are based on the 2-6-4s introduced by Sir Henry Fowler and later modified by Sir William Stanier) they show how the sphere of usefulness of an existing design can be extended if restrictions due to maximum weight and rigid wheel-base can be overcome. The new engines, the first of which, No. 2673, is described elsewhere in this issue, are very light and compact for their power; 45 of them are under construction at Derby. The sharpest curve which the earlier type would take is 6-ch. radius; and as it was desired that the new engines should negotiate 5-ch. curves, the rigid wheel-base had to be reduced. Because a shorter wheelbase would have sent up the weight per foot run unduly, the whole design had to be overhauled, to reduce weight wherever opportunity offered. The reduction thus achieved (3 tons 8 cwt. in weight empty) was in itself a noteworthy feat.

Railway Wages Agreement

AGREEMENT was reached on August 17 between the Railway Executive Committee and the National Union of Railwaymen, the Associated Society of Locomotive Engineers & Firemen, and the Railway Clerks' Association on the claims of the trade unions for improvements in rates of pay and conditions of service for railway salaried and traffic staff. Separate negotiations as to the railway shopmen's claims are in progress and were continued on August 22; the principal points at issue, apart from the application for increased wages, were claims for a guaranteed day and guaranteed week.

Particulars of the settlement reached in regard to the salaried and traffic staff were given on page 175 of our last week's issue, but it should be emphasised that the negotiations with the trade unions were conducted by the Railway Executive Committee and not the railway companies as generally was stated in the press. It will be recalled that in March last the trade unions combined in presenting to the Railway Executive Committee comprehensive claims for improvements in rates of pay and conditions of service. These included a general minimum wage of £4 10s. a week, increased rates for overtime and Sunday duty, an additional week's holiday with pay, the introduction of a 40-hour week, and a contributory pensions scheme.

These sweeping claims and their consequential heavy cost necessitated very careful and detailed consideration by means of the usual negotiating machinery which, incidentally, has functioned with admirable smoothness throughout all the strains and stresses caused by war conditions. The final stage in this machinery normally is an award by the Railway Staff National Tribunal, of which the Chairman is an independent person appointed by the Minister of War Transport. On this occasion, however, the unions urged that the questions at issue should be settled within the industry and not referred to arbitration.

The Railway Executive Committee was not entirely a free agent in negotiating a settlement of the unions' claims as it will be recalled that it was originally appointed by the Minister of Transport (later renamed Minister of War Transport) when he took control of the railways, for the purpose of giving directions under the Railway Control Order. Thus any recommendation which the committee might make would be subject to approval by the Minister. Further, although the cost of any concessions granted during the period of control would fall to be borne by the control account and would not affect the fixed rental payable to the companies under the Railway Control Agreement, the members of the committee, as General Managers, could not disregard completely the fact that with the cessation of hostilities, the termination of Government control of their undertakings is approaching, after which the additional cost would have to be borne—and earned—by the companies themselves. After detailed preliminary discussions had taken place between the R.E.C. Staff Sub-Committee and the unions, the Railway Executive Committee took over the negotiations on July 31 and these then proceeded more or less continuously, on several occasions until the early hours of the morning.

The extensive publicity given by the unions to their comprehensive proposals obviously made it desirable for them to make every endeavour to secure a substantial part of their claims and, in the result, they were able to obtain the biggest advance in wages achieved for a number of years. Railway traffic grades for some considerable time have had different rates for London, urban, and rural areas, designed to reflect the cost of living in those areas, and before the war, the minimum rates for the lowest grades were 50s., 48s. and 47s. a week in these areas respectively. Since September, 1939, war advances have been awarded from time to time totalling 25s. 6d. a week and these, together with a special award of 4s. 6d. a week by the Railway Staff National Tribunal, made the existing minimum wage for certain grades at the outset of the negotiations 80s., 78s. and 77s. respectively a week. The unions claimed a weekly national minimum of 90s. without differentiation between London and the other areas, and they have secured a minimum wage of 87s. in London, 85s. in industrial areas, and 84s. in rural areas. It will be seen that this represents an increase of 7s. a week, but it is understood that 4s. 6d. of this sum represents an addition to the minimum wage and 2s. 6d. is being added to the war advance, making it 28s. a week. Details of the award as applying to the various grades of staff will be published in our next week's issue.

In considering these rates it should be remembered that they are only minimum rates, and do not include payment for overtime and Sunday duty. Further, there are so many grades in the railway service that very few men need remain for any protracted period on their minimum rates. The acceptance of these revised rates was dependent on agreement being reached on the differential rates for the extremely numerous grades receiving more than the minimum rates, but after a further four days' discussion, this was done, although in some cases it was necessary to award more than 7s. a week. In the case of railway salaried staff the minimum increase will be £10 to £15 a year up to Class 1, with an increase in the war advance of £6 10s. a year for adults and half that sum for juniors. Increased rates for overtime and for Sunday duty were also agreed.

A somewhat intriguing statement is that revised arrangements for staff in receipt of salaries up to £500 have been agreed, as, normally the Railway Clerks' Association has not negotiated in respect of the salaries of special class staff, that is those receiving salaries over £350 a year in the provinces or £360 in London. We learn, however, that it is now proposed to introduce a very flexible form of grading of positions for staff earning between £360 and £500 a year, excluding the war advance. No announcement has yet been made as to the payment of the additional war advance of £6 10s. to staff in receipt of salaries between £500 and £1,500 a year who already receive the existing war advance of £66 6s. a year. As the amount payable is now £72 16s. a year, we can see no justification for not extending payment of this sum to all special class staff.

After the railway companies' decision to give railwaymen an additional week's holiday after Government control ended, the Railway Executive Committee agreed to railway staff having a fortnight's holiday with pay commencing in 1946, providing the man-power position permits. If it does not, pay will be given in lieu of the additional week's holiday. It also agreed that three days' additional holiday be given to clerks in classes 3, 4 and 5 who hitherto have had 12 days' annual holiday. It was, however, unable to agree to the adoption of a 40-hour week for railwaymen, as this claim could not be dealt with in isolation from conditions in industry generally, and the claims for payment during sickness and for pensions were also deferred as they would require to be dealt with in the light of the proposed national scheme.

Both the Railway Executive Committee and the trade unions are to be congratulated on reaching an agreement without the men resorting to drastic action which would cause unnecessary inconvenience to the public. It is true that small sections of the staff, notably in Liverpool and Birkenhead, have declined to work on Sundays recently because of the delay in reaching agreement, but at some other depots similar action has been attributed to the complaint that the men have to pay income tax on their overtime and Sunday pay, a matter which is obviously one for the Treasury and not for the Railway Executive Committee or the railway companies.

No figures of the estimated cost of these concessions has yet been published, but it cannot be less than £10 million a year and may well be appreciably higher. This increase in costs presumably will not be allowed to affect the present level of rates and charges but the post-control level obviously must be influenced by the then existing level of wages and other conditions which cannot yet be evaluated.

The control account for the current year, however, will be affected materially by reason of the arrears of maintenance provisions. At the end of 1944 the sums paid into the trust funds in respect of arrears of maintenance in respect of the main-line companies and L.P.T.B. undertakings stood at £125,760,000, of which £122,906,000 represented arrears of maintenance, etc., and the balance interest. Under Article 8 of the Railway Control Agreement the addition to be made to the base-period charge has to be recalculated from time to time to represent any change in the real value of the base-period charge due to increases or decreases in the hourly cost of wages and price levels.

Any increases which are made in wages for railway engineering and workshop staff obviously will necessitate an adjustment in the addition to the base-period charge in respect of that portion of the £122,906,000 which represents the cost of carrying out arrears of maintenance. Even a trifling increase in wage costs represents an appreciable sum when applied to a figure of this magnitude and it is clear that substantial additional sums will have to be transferred from the control account to the various maintenance trust funds during the current year.

Road-Rail Negotiation Continues in India

AT a recent meeting of the Indian Post-War Transport Policy Committee in New Delhi, Sir Edward Benthall, Member for War Transport, announced the following policy put forward by the Government of India for consideration. It includes regulation of competition between road and rail interests by control of fares, routes, and traffic, together with regulation of conditions of service, exercised by Provincial Transport Controllers, as agreed between the Central and Provincial Governments. Maximum co-ordination will be sought between road and rail interests, as far as possible by negotiation of financial participation by State Railways in reliable road motor transport concerns, existing or of future promotion, combined with the co-relation of rates and fares and of the sharing of traffic where competition occurs. Management should be in the hands of those with expert knowledge of road transport operation, and, where this already exists, it would not be supplanted by railway personnel.

The policy visualises negotiation in the common interest to avoid competition and rate-cutting, but leaving open a wide field for competition in service. Though the Central Government has no intention of dominating road transport—the concern of Provincial Governments—through the railways, the railways may insist upon negotiating a controlling interest in a particular road transport concern to secure protection for State investment. The control of the Central and Provincial Governments over rail and road maximum rates respectively, will prevent the imposition of unduly high transport costs on the public, and the powers of Provincial Governments over road undertakings will remain unaltered even though the railways have financial interests in them. The free issue of licences to private carriers should also form a check on inordinate charges generally, which will, moreover, be subject to rates tribunals.

Most of the Provinces, while agreeing to railways negotiating a majority interest in particular companies under certain conditions, are opposed to their acquiring a dominant interest in general. Certain Provinces favour Provincial Government ownership of road transport services, and others prefer participation with the railways and the public in joint road transport companies. River and coastal shipping interests also have to be consulted, and the whole question undoubtedly involves one of the most intricate problems in post-war administration, which can be solved only by the most broadminded administrators. Thus negotiation proceeds as it has done for years past, but so far very few practical results appear to have been achieved. Now, however, there does seem to be a substantial basis of agreement on essential points of control over the post-war transport boom when it materailises.

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The Reichsbahn and the War

THROUGHOUT the war in Europe we gave periodical warnings against underestimating the enemy's strength in railway transport, which has occupied such a vital place in the strategic scheme both of the Allies and of our enemies. In February, 1940, we pointed out that, if in fact the German railway system was not weak relatively to the railway systems of other belligerents, the many disparaging articles in the lay press concerning the Reichsbahn would have done no service to the British people.

At that time, there was a marked tendency to "prove" that the German railways were liable to imminent collapse by means of misleading mathematical calculations regarding locomotive and rolling stock totals, and permanent way maintenance expenditure, disregarding general efficiency of equipment, power of locomctives, capacity of wagons, and so forth, and basing conclusions entirely upon unit figures. For example, mileage figures of permanent way renewal in any particular year could not provide a reliable criterion of the condition of the track, which, when so well founded and maintained as that of the Reichsbahn, could safely bear comparative neglect for a considerable period. From our own observations up to the outbreak of war it appeared that the railway system of Germany had been maintained in a high state of efficiency, and in general that it was adequately provided with motive power and rolling stock.

In December, 1940, we returned to the subject of the Reichsbahn, and pointed out that there was evidence that German activities were planned with energy and determination, and were supported adequately by a highly-organised and efficient railway system. As we then observed, the repeated activities of the R.A.F. in attacking the German transport system were in themselves proof that our Air Ministry had no false impressions about the value of such attacks, or the ability of the Reichsbahn to repair its damaged railways as rapidly as we ourselves were able to do during the blitz days, and later at the time of the flying bomb attacks. Subsequently, we pointed out on a number of occasions that Ministry of Economic Warfare announcements were heavily tinged with "wishful thinking," as events proved abundantly.

In the late stages of the European war, German railway communications were high priority targets of the Allied strategic and tactical bombers, and the weight of bombs dropped on traffic centres and other railway installations in Reich territory alone amounted to many hundred thousand tons. Sheer weight of attack eventually succeeded in cutting the German railways more rapidly than they could be restored for traffic, and facilitated the final victory, but it is nevertheless of considerable interest to have the authoritative opinion of Colonel John W. Wheeler, XVI Corps of Engineers, 9th U.S. Army, that the ability of the German railways to continue to operate under terrific air attack prolonged the war for many months, and that, without this highly-trained organisation and excellent system, Hitler could not have carried on his fanatical final twelve months of war.

The subject is of sufficient importance and interest to railwaymen throughout the world to justify our quoting the following extracts from a survey by Colonel Wheeler recently published in our American contemporary, the *Railway Age*. In this he says: "Over long periods of time the Allied air forces reported destroying great numbers of locomotives, cars, bridges, yards, and terminals, but to our surprise the enemy kept on rolling. At every station there appeared this sign, *Raden müssen rollen für den Sieg* (wheels must turn for the victory). Even the railways could not roll him to victory, but, to the astonishment of all, when the Ruhr industrial district was captured there were found there and in Westphalia, just south of the Ruhr, hundreds of locomotives in good condition and thousands of cars—box cars, flats, gondolas, new refrigerators, coaches, and sleeping cars. True, the enemy had robbed the railways of France, Belgium, and Holland, but, even so, his losses were terrific over a period of months and he still had motive power and cars aplenty when the end came. The railways were finally put out of business by Allied air forces by cutting rail in enough places to prevent repair and thereby pen up the equipment until attacking ground forces could over-run it.

"In the final days of the struggle, after the writer's corps had crossed the Rhine and attacked the Ruhr Valley, the enemy destroyed very nearly all of his railway bridges, and on the Rhine he accomplished total destruction. All bridges, such as the one at Düsseldorf, were destroyed beyond repair. On the whole, Germany's railway bridges were equal to those of any nation and superior to many.

"Even after six years of war, with accompanying man-power shortage, German railway maintenance was excellent. Few people have seen better ballasting and surfacing than existed right up to the final surrender, as the illustrations show. Ballast is generally broken stone or slag. Both are abundant in Germany and on short haul from the source. Germany has used with more success the steel tie (sleeper) than has any other nation. The writer feels that our treated wood ties are better, but knowledge of German success with steel is worth remembering when and if wood ties become scarce . . . . Horizontal curvature is easy and compares favourably with ours (in the U.S.A.). Gradient is held to our standards with extensive use of tunnels in rough topography.

"Apparently the railway employees were loyal to the Wehrmacht to the final day but, on the other hand, were the most willing class we found to co-operate with us in getting the destroyed system back in operation. We merely repaired the lines we needed for our supply, but the railway people co-operated heartily and seemed anxious to get their lines back into operation. After the Rhine River crossing, the writer's Corps attacked and cleared up the Ruhr industrial district and remained there after so doing to govern temporarily that district. Germany was a railway-minded nation using many tramways adjacent to highways for heavy hauling.

"Truly, Germany was a great nation of efficient people and natural resources underlaid with a lust to conquer and rule by force. She has finally paid for her folly in a destroyed nation. The red board is against her now; it will gradually change to yellow, but those of us who saw the destruction doubt the appearance of the green light for many decades."

A Unified Transport Plan for Boston, U.S.A.

IT is admitted by the promoters that the London Passenger Transport Board and its operation have been taken as a model in the preparation of a comprehensive scheme for unifying, under a state-owned authority, all passenger transport within a 12-mile radius of the centre of Boston, U.S.A. A special body appointed by the Massachusetts State Legislature, composed of one member of the State Senate, three members of the State Assembly, and all members of the State Public Utilities Commission, and called the Metropolitan Transit Recess Commission, has been examining the matter; this unification is what it recommends. The reason for the proposed change is that in Boston, as in most large cities, there is a continual tendency for the population to move further out from the city centre, with the result that 29 towns of varying size in the immediate vicinity of Boston have become largely residential areas for the city's workers.

With this movement there is also a constant trend towards the use of public road services and private cars for getting into and out of the city, and the increasing street congestions so caused will soon make elaborate and costly highway improvements essential, unless some other solution of the problem is found. The decline in passenger season-ticket traffic on the railways may be measured by the fact that whereas in 1920 the three steam railways serving Boston handled 79,000,000 suburban passengers, by 1941 the number had declined to 34,200,000. As a result, the frequency of the railway services has diminished, and the rail facilities have become correspondingly less attractive.

Three main lines serve the city of Boston—the New York, New Haven & Hartford, the Boston & Albany (a subsidiary of the New York Central), and the Boston & Maine. The proposal is that these companies in future should handle long-distance passenger and essential freight services only within city limits, and that their suburban services should be turned over to the new authority. The lines affected would be those of the Boston & Maine to Arlington Heights (the Watertown and Lexington branches), Lynn, Woburn *via* Somerville, and Reading; the Boston & Albany main line and Highland branch to Riverside; the New Haven Providence line to Dedham and from Riverside to Needham Junction; and the Old Colony Railroad (a subsidiary of the New Haven at present worked at a considerable loss) to Braintree. Various short connecting lines would require to be built, and some new construction is proposed on the site of the old narrow-gauge Boston, Revere Beach & Lynn Railroad; the whole of the lines mentioned would also be electrified.

Most of the existing electric rapid-transit lines in Boston are owned by the Boston Elevated Railway, which is State-operated but in part private property; purchase of this system by the State would be completed, and federal income tax on the property, estimated at $600,000 in 1944, would be eliminated. The new connections previously referred to would link the suburban railways, at various convenient points, with the subways and elevated structures of the existing rapid transit lines, so bringing the suburban passengers through the rapid transit tunnels into the heart of the city. Bus and tramcar services would act as feeders to the electric trains on the railways and transit lines, and a completely co-ordinated local transport monopoly would thus be established. The total cost of the new construction, electrification, and equipment is estimated at $33,600,000, or much the same as that of providing one multiple-deck super-highway through the city, but any complete highway scheme with the passenger-carrying capacity of the electrified rapid-transit scheme would cost at least five times that sum. Further, the railway scheme would produce direct revenue, whereas the highway scheme would not.

The feature of the new plan likely to arouse the most severe opposition, however, is that the $33,600,000 estimate includes no allowance for the use of the existing railway tracks by the rapid-transit services. The commission claims that, as the railway suburban services for the most part are operated at a loss, the railway companies, if relieved of the operation of the suburban trains, should be prepared to permit the use of their lines at a nominal cost to the public. The cost of all improvements to these lines, such as relocation, additional tracks, flying and burrowing junctions, and signalling would be borne by the new authority. It is proposed that at Boston South Station, the terminus of the New York, New Haven & Hartford and one of the largest in the United States, the space released by the removal of the suburban traffic should be converted to a bus terminal. Fares of the unified system would be on a zone basis, up to a maximum of 20 cents, and a single ticket would take the passenger through from starting-point to destination, irrespective of the number of trains or other vehicles used. An annual profit of $700,000 is expected after paying all operating costs and interest on the capital expended.

* * * *

Forms of Address

IN the last few years the inhabitants of these islands have grown accustomed to seeing themselves hailed in many sections of the press as " the common people of Great Britain." This description appears to be accepted without demur, largely, we believe, because most of those concerned are inwardly convinced that it applies to everybody but themselves. We have given some thought to finding an acceptable alternative, and we are reminded that when the railways embarked on extensive standardisation of motive power, they evolved the " general purpose " locomotive. The versatility most of us have had to show in wartime suggests that this country is populated largely by general purpose citizens, combining the elegance of a " green arrow " with the sturdy resolution of a " black Stanier."

Our suggestion shares with the now hackneyed " common people " the disadvantage that there does not appear to be a convenient and brief anthithesis to describe those who cannot be so classified. The railways, indeed, were tending towards a broad division into the general purpose and the streamline, but in the present stage of evolution there seems little prospect of so simple a partitioning of the human race, among whom streamline and non-streamline types continue to flourish in unplanned and unpredictable profusion.

The three Services have tended to adopt a simple type classification for their personnel, dividing them into the good types and the bad. In civilian circumstances the good types might be considered to be the aforesaid common people, and the bad types are the hitherto undefined remainder, no doubt with landlords, company directors, and members of the Stock Exchange prominent among them. A system of nomenclature so simple and flexible recommends itself for extension from the social to the political field, where it would strike a homely and universally intelligible note in future reports of strife between democrats and fascists. We look forward to a world governed in all countries by representatives chosen by the freely expressed will of the good types.

Another Service invention, however, although an admirable and all-embracing collective, has had an inauspicious *début* in civilian life. We refer to the term " bodies," the use of which by an employer of labour recently evoked indignant protests. Yet bodies in the Services, although to the uninitiated civilian eye they appear to swarm everywhere, are a priceless commodity. Nearly six years of war failed to reveal who employed them or what they did, but it was a familiar fact that they were invariably busily engaged on behalf of somebody else whenever the shadow of manual labour loomed on their immediate horizon.

We noticed in the recent election that at least one candidate evidently was conscious of the unsatisfactory quality of existing collective forms of address. Boldly departing from the hackneyed " common people," he addressed himself to " the plain man." He suffered a resounding defeat, largely contributed to, we suspect, by the incensed multitude who felt they had been described by implication as " plain women."

ELECTRIFICATION OF LEOPOLDINA RAILWAY.—Our contemporary, *Brasil-Ferro-Carril*, commenting on the news that the Leopoldina Railway has under consideration the adoption of electric traction on its suburban routes out of Rio de Janeiro and eventually up to Petropolis, a summer resort in the hills, emphasises the importance of the step and the great improvements in the working it may be expected to bring. The section between the Rio terminus and Caxias is very heavily loaded at certain hours and electrification offers the only means of coping with it in an adequate manner; any improvement along the route would benefit Petropolis itself by reducing the journey time. The company, it is understood, for some time has been collecting the necessary particulars to enable the details of the electrification scheme to be elaborated. The results of the Central line electrification have been such that the conversion of the Leopoldina route appears more than ever advisable, but considerable expenditure would be involved and the sympathetic assistance of the authorities would be necessary and fully deserved.

XUM

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

"Consecutive Number" Stations

64, Martyrs' Field Road,
Canterbury. August 16

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In his search for "Consecutive Number" stations I am surprised that Mr. Roberts is content to let the number 2 be filled by a bus garage, especially when the same transport concern, the L.P.T.B., can supply a perfectly good station to fill the place. Can Mr. Roberts' list, therefore, be amended to read:

2. Tooting Broadway.

Also, as nobody seems to have suggested any station to fit the number 0, may I suggest

0. Norton, Norton Bridge, Norton-in-Hales.

Or is that going a bit too far?

Yours faithfully,
ARTHUR G. WELLS

TO THE EDITOR OF THE RAILWAY GAZETTE

1A, Dover Road, Brighton, 6,
Sussex August 14

SIR,—Regarding the letters of Mr F W Roberts and O H Corble, Esq., I would suggest for number 1, Wunthro, a town in East Burma, and for number 8, Aix, a town near Marseilles.

Yours sincerely,
G. H. FAIRCHILD

The Evolution of Railways

Essex House, Essex Street,
Strand, W.C.2. August 13

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In your issue of August 10 you published under the heading "The Beginnings of the Festiniog Railway," a quotation I sent you from the "Journal of a Tour and Residence in Great Britain during the years 1810 and 1811 by a French Traveller" (Edinburgh, 1815). Here, if you care to make use of them, are two further excerpts from that book.

After a two-day journey from Cowbridge (Glamorgan) to Tenby the author wrote:—

"July 16 (1810). We crossed several iron rail-ways leading from founderies and coal-mines in the country to the sea. Four low cast-iron wheels run in an iron groove lying along the road. It is now, however, the general custom to place the groove on the circumference of the wheel, running upon the rail, which is a mere edge of iron upon which no stone or other impediment can lodge. Five small wagons, and sometimes six, fastened together, each carrying two tons of coal, are drawn by three horses, that is four tons to each horse, besides the weight of the waggon—about five or six times as much as they could draw on a common road; on an ascent the waggons are separated."—*Vol I, page* 212.

Newcastle, "February 28 (1811). The coal drawn to the surface of the soil is conveyed to the lighters by means of low carriages, on four small wheels fixed to their axis, that their motion may be perfectly equal. They travel on rail-ways, which are composed of two bars of iron, upon which the wheels, which have grooves at their circumference, run without impediment. Ninety-two bushels, weighing about two tons, besides the waggon, are drawn by a single horse, with so much ease, that the driver is obliged, on the least descent of the road, to press on the wheel with a sort of lever, to retard its motion by the friction, that the carriage may not run too much on the horse."—*Vol. II, page* 61.

Yours faithfully,
KENNETH BROWN

First Train Journey

Franco-Ethiopian Railways,
British Military Administration,
Dire Daoua, East Africa Command. July 30

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I was interested to read in "The Scrap Heap" of June 8, of the Johannesburg man of 38 who had never been in a train. One need not go as far afield as that for similar cases. Shortly after the last war my wife was making a train journey from a station in North Devon accompanied by her maid, a woman of over thirty, when the latter confessed that she had never been in a train before! In about 1930 I was taking another of our maids, a girl of about sixteen, into the local town by road, and when near Halwill Junction, where the road and line run alongside, a train came by. The girl exclaimed, "Oh, Sir!! That is the first train I have ever seen!"

Yours truly,
O. P. COLLIER,
C.M.E., Major R.E.

Tip-Up Seats in Corridors

Wilts. August 18

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Tip-up seats in train corridors would be a great boon to travellers in crowded trains.

S. CLAUDE TICKELL

Publications Received

The Stoker's Manual. London: The Ministry of Fuel & Power, His Majesty's Stationery Office, 1945. 7 in. × 4¾ in. 88 pp. Illustrated. Price 6d.—The conservation of fuel is still of the greatest importance and this book has been written specially for the man who handles coal and on whom rests the responsibility for its use. The importance of skill at the furnace is fully recognised by the Ministry of Fuel & Power, and this book is intended to assist the stoker in his work. The manual consists of five parts, the first of which deals with the operation of shell boilers, with methods of firing and the tools used. Draught and draught gauges, and the management of the fire are dealt with, and a section is included covering water level, cleanliness of the boiler house, blowdown, and smoke. Another section describes the main features of the principal types of mechanical stokers and their operation. There is also a number of useful diagrams showing the principal sources of heat-loss in Lancashire, Economic, and vertical boilers. The second part of the manual is a summary of the first, and the third part deals with the operation of central-heating boilers. The third part is summarised, as a handy reference, in part four. In part five there is an explanation of the principles of combustion, illustrated by simple diagrams.

The A.E.C. Gazette.—We have received from the Associated Equipment Co. Ltd., of Southall, a copy of the first issue of the company's revivsed house magazine *The A.E.C. Gazette*, which was suspended in the early stages of the war and has now reappeared as a quarterly. This number, for March, 1945, strikes a personal note with a series of photographic reproductions and paragraphs introducing the company's executive staff in a peacetime planning campaign. The curtain is lifted on the A.E.C. contribution to the war effort—over 6,000 "Matadors," 500 armoured cars, 4,000 tank engines, 1,000 tankers for the R.A.F., 160 engines for the "Mulberry" port, and much development work in addition. Amongst other interesting articles is a contribution on vehicles for civilian use, both passenger and freight.

Negative Rake Milling.—We have received from the Director of Jigs, Tools and Gauges, Machine Tool Control, London, a copy of the department's 16-page brochure "Negative Rake Milling." The publication deals with recent developments in the use of cemented-carbide tips and negative rake for milling cutters. The theory on which the use of negative rake is based is fully explained and illustrated by diagrams. Practical examples are given, with tabulated data, for applications of negative rake to various types of milling operations, fully illustrated by line drawings and photographic reproductions. The brochure will be found of interest and practical assistance to engineers engaged on high-speed production work.

A.S.F. Calendar.—For many years it has been the custom of the American Steel Foundries of Chicago to issue an annual calendar covering the 12-month cycle from July to June, illustrated with notable old prints of railway scenes in colour. Once again the tradition has been preserved, despite production difficulties in present circumstances, and the calendar for 1945-46 contains 12 rare and interesting subjects not previously reproduced in A.S.F. calendars. An accompanying folder contains historical and background information concerning the views. The calendar itself shows three months on every sheet, namely, the current month in the middle, prominently displayed against a coloured background, and the preceding and succeeding months above and below respectively, printed in grey on white.

The Scrap Heap

HEART CRY

If the present Government runs this country with as much foresight as it has arranged the two VJ days—then heaven help us.—*Mr. R. J. Thomas in a letter in "The Sunday Express."*

* * *

THE VJ-DAYS MUDDLE

More lamentable mismanagement than the VJ holidays produced it would be difficult to imagine. To fix Wednesday as a holiday was calamitous even if there were certain superficial reasons—the fact that people would take Wednesday off anyhow, or the desire to synchronise festivity with America (which is only approximately possible anyhow). At nine o'clock on Tuesday evening the public were officially urged to go on with their work as usual. At midnight that night, when four-fifths of them were presumably in bed, and again at seven the next morning, when half or two-thirds of them were presumably still dressing or still asleep, the news that Wednesday was to be a holiday was given. Whether the information gratified anyone I have not discovered. Everyone I have heard of roundly cursed the whole business; some wished they were working normally; some wished the war was still going on (not quite seriously, I trust). Housewives in search of emergency provisions formed vast queues at bakers and butchers; van-loads of goods drove up to factories where there was no one to receive them; many business men living outside London heard nothing of the holiday till they got to their local stations; finally, in the Gower Street district of London, at any rate, the eight o'clock post arrived at after half-past twelve—and Wednesday happens to be Press day for the weekly reviews. Some people no doubt enjoyed it all. But a sudden holiday creates a disastrous dislocation in national life, and if the Ministry of Labour issued a statement of the loss of production measured in man-hours the result would be staggering. However, it no doubt had to be, so the only thing was to get it over and then on with the job. Meanwhile, I observe that on the same day that Sir Stafford Cripps announces that the cotton goods situation is so desperate that coupons will have to last longer, his Board of Trade announces that cotton goods in the shape of red, white and blue bunting can be bought coupon-free.—*From "Janus" in "The Spectator."*

During the holiday rush thousands who "live at home with ease" or with moderate ease have been daily regaled with accounts of those other thousands who strove feverishly for trains to take them away from home. The purveyors of this information knew their business well, since it appeals to some of the commonest emotions of the human heart. First there is the love, harmless, if rather futile, of tit-bits of disconnected knowledge. The exact distance the queue stretched out of the station and the hours that those at the head of it waited for the train are always fascinating, and would be still more so if someone calculated how far those passengers would extend if placed head to tail in a single row. Akin to this taste is that of those who cultivate the stupendous and the colossal. The statement that there were 20,000 people packed within the limits of Crewe Station must stir them to the depths of their being. Second there comes an emotion regrettably less innocent. Gratitude is one of its chief ingredients but it is gratitude too palpably selfish. There can have been scarcely one of the stay-at-homes who, reading of those hot, patient thousands, did not exclaim "But for the grace of God there goes John Bradford."—*From "The Times."*

* * *

100 YEARS AGO

From THE RAILWAY TIMES, *August* 23, 1845.

DIRECT WESTERN RAILWAY from London to Falmouth and Penzance.—CAPITAL £3,000,000, in £120,000 Shares of £25 each; DEPOSIT £1 7s 6d. per Share.—The line will commence at or near Newbury, in Berkshire, and proceed from thence in a direct course to Taunton, thence by Tiverton to or near Crediton, Okehampton, and Hatherleigh, Launceston and Truro, to the port of Falmouth, with a continuation of the line from Truro by Redruth, to Penzance.

The towns of Devizes, Lavington, Ludgershall, Marlborough, Warminster, Westbury, Bradford, Trowbridge, Frome, Bruton, Wells, Glastonbury, Shepton Mallet, Castle Cary, Somerton, and Langport, and the populous villages in their vicinity, now destitute of the benefits of railway communication, will have these advantages conferred upon them, and be placed in immediate connection with the metropolis.

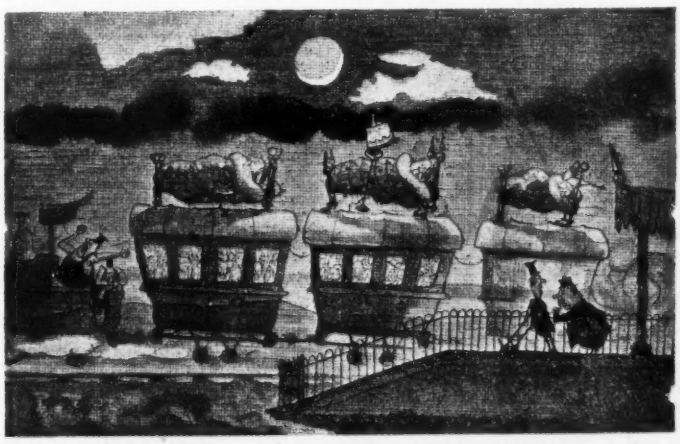
The rich agricultural and mineral districts of Devon and Cornwall will have similar advantages, and London will be connected with the city of Exeter and the ports of Plymouth, Falmouth (the packet station of the empire), and Penzance by the shortest and most direct course.

The proposed line will also unite the western districts of the kingdom with Wales and the north and north-eastern counties, and be to the Great Western Railway that which the Trent Valley is to the London and Birmingham and Grand Junction Railways.

The wide gauge, the natural one of the western counties and of Wales, will be adopted, and such portions of the Great Western line as unite Newbury with the metropolis, and Taunton with Tiverton and Exeter, will be connected by junctions with the proposed line.

A distance exceeding thirty miles will be saved by the contemplated line between London and Exeter.

The prospectus, with the list of the Provisional Committee of Directors will be issued shortly; in the interim, communications are to be addressed to Messrs. Bell, Broderick and Bell, Solicitors, Bow Church Yard.



"Ah! The night sleeper to Penzance"

[Reproduced by permission of the proprietors of "Punch."

RAILWAY QUESTIONS AND ANSWERS

Statement.—Under private enterprise railway directors and managements study their own and their stockholders' interests before those of the public.

Answer.—This statement ignores the fact that the railway companies have statutory obligations to the public and pre-supposes that the interests of the public are opposed to those of the owners or stockholders of the railways. It is wrong for two reasons: (*a*) One in every 30 adults in the British Isles is a railway stockholder, and (through the railway stockholdings of insurance companies, friendly societies and provident funds) every person holding one or more of the millions of insurance policies in force to-day has a stake in the railways; (*b*) The interests of all these people can best be served by giving the finest possible service to the public. Far from studying their own and their stockholders' interests first, the railways have subordinated their interests in the general service of the public and the nation. Maintenance, renewal, and modernisation in the cause of increased service and efficiency have always been placed first; the question of dividends comes afterwards. This is borne out by the high standard of efficiency of the railways in 1939 and their ability to tackle the gigantic task which the war then imposed upon them.—*From "Answers to Questions and Statements," issued by the British Main-Line Railway Companies, 22, Palace Chambers, London, S.W.1.*

* * *

A feature of railway travel is the long queues at London stations of holiday-makers anxious to get home for their holidays at home.—*From "Charivaria" in "Punch."*

* * *

In 1895, the Ohio Steel Company, of Youngstown, Ohio, not being able to generate sufficient steam with the boilers already constructed, and not wishing to wait for the completion of those in course of erection, obtained six locomotives, and placing them side by side at the rear of the engine house, connected them up to supply steam to the extent of 600 h.p.

* * *

THE P.R.Os

In Washington, as in London, there is a strong demand for abolition of Public Relations Officers in Government departments. The original idea behind these appointments was that the P.R.Os should be a convenience for newspapers; in fact, many of them became mere publicity agents for their Ministers.

The last official figures for British P.R.Os were given in May. There were then 1,187 of them, costing £572,152 a year.

It is believed that 90 per cent. of American Government Press agents will be discharged shortly. This would be a splendid example for Britain to follow.—*From "The Londoner's Diary" in "The Evening Standard."*

* * *

TAILPIECE

(British railways are coping with record August holiday crowds)

They fill the open beaches,
They rove upon the hills,
Explore the river reaches,
The moorlands and the ghylls,
They bask, the peril over,
In scenes sublime and fair,
And it is British railways
That have to get them there.
The trains are overloaded,
The railwaymen are few,
And rolling-stock is scanty
For all it has to do.
But Britishers go places
For rest and change of air,
And railways, British railways,
Proceed to get them there.

E. C.

XUM

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Johannesburg-London Air Service

South Africa's plans for air travel are at at advanced stage, and it is expected that the new Johannesburg-London service will come into operation soon. The airport at Palmietfontein is nearly ready, and a number of South African Airways personnel has arrived in Great Britain for training on the Avro-York aircraft which will be used between London and Johannesburg. The international airport at Kempton Park will be known as the "Highveld Airport."

Financial Position, April, 1940

The results of the first month's working of the South African Railways & Harbours for the financial year 1945-46, showed a deficit of £188,524, incurred mainly by the harbours and steamships. The total revenue from all services was £4,870,881, representing an increase of £669,763 over the earnings for April, 1944. Of this amount £403,295 was accounted for by additional receipts from goods traffic.

Expenditure amounted to £5,059,405 (inclusive of appropriations on Net Revenue Account) which, because of increased maintenance and operating costs and additional cost of living allowance payments, was £770,430 greater than for April, 1944. Compared with the estimates, revenue reflects a decrease of £148,079, while expenditure has advanced by £42,650.

Deficit for Year ended March 31, 1945

The operation of the railways during the financial year 1944-1945 resulted in a surplus of £1,032,490. The harbours, on the other hand, suffered considerably as a result of the dearth of shipping under war conditions, and results showed a deficit of £575,012. The working of the South African Railways & Harbours' steamships showed a satisfactory result, with a surplus of £265,661.

The operation of the airways' services showed a deficit of £24,604 at the close of the year. Services on a restricted basis were resumed only in December, 1944, at which time the deficit was £25,119, so that the four-months working resulted in a small profit.

The surplus of £1,032,490 earned by the railways was sufficient to cover the appropriations on Net Revenue Account totalling £987,000, but was insufficient to meet the net loss reflected by the other services. The financial year, therefore, closed with a final deficit of £288,465.

Level Crossings

In the last sixteen years £1,602,840 has been spent on the elimination of level crossings in the Union. Of this amount the share of the South African Railways & Harbours Administration was £1,014,002, and local authorities, city and town councils and other bodies together contributed £588,838. The policy of doing away with dangerous level crossings, either by bridges or subways, and of protecting others by flashlights, warning bells and other safety devices has been systematically carried out since the report of the Level Crossings Commission was presented in 1927.

Within municipal areas the railways normally pay 50 per cent. of the costs of elimination. If a municipality agrees to embark on a scheme for the elimination of all dangerous crossings within its area of jurisdiction, the basis of 60 per cent. administration and 40 per cent. municipality applies. In practice this only affects the larger municipalities; for smaller municipalities the matter is considered on its merits and the basis of contribution varies, with the administration assuming up to 80 per cent. of the total cost. The cost of providing structures to eliminate crossings on national roads is arranged on a half-share basis.

UNITED STATES

Railway Employees' Safety Awards

Every year the National Safety Council of the United States organises a contest between the railways for the best record of freedom from injury among their employees. The basis of the awards made in the Railroad Employees' National Safety Contest is the total number of accidents suffered by members of the railway staffs per million man-hours worked. In order to encourage the smaller lines, the railways are divided into six groups, according to their size, for the purpose of the assessment. The awards for 1944 have just been made.

In the first group, of railways working 50,000,000 or more man-hr., the Union Pacific had the fine record of only 4·59 cases of death or injury per million man-hr., or less than half the average figure of 10·48 for all railways in this group; for sustained excellence throughout the war period, the Union Pacific has also been awarded the National Safety Council's special wartime award for Distinguished Service to Safety.

In the 20,000,000 to 50,000,000 man-hr. group, the Michigan Central subsidiary of the New York Central System did almost as well with a figure of 4·63. In the 8,000,000 to 20,000,000 man-hr. group, the Duluth, Missabe & Iron Range Railroad was the winner, with a record, for the U.S.A. railways, of only 1·17 deaths or injuries per million man-hr. Of non-railway units, however, the New York Zone of the Pullman Company was responsible for the remarkable achievement of going through an entire year in its car workshops without a single fatality or even injury to any of its employees.

Of the smaller lines, the Colorado & Southern took first place in the 3,000,000 to 8,000,000 man-hr. group with 6·46, the Lake Superior & Ishpeming in the 1,000,000 to 3,000,000 group with 3·11, and the Pittsburgh, Shawmut & Northern in the less than 1,000,000 with 3·11; the average for all railways in these groups was about 17 cases of death or injury per million man-hr. On the United States railways as a whole, although the total casualty rate of both fatal and non-fatal accidents increased as compared with 1943, the death rates per million man-hr. were reduced by 26 per cent., and the non-fatal accident rates dropped slightly also, because of the greatly increased time worked by the railway staff under recent wartime conditions.

A New Bridge over the Missouri

A new bridge of considerable importance to through-rail communications in the Middle West was opened on June 1 over the Missouri River near Kansas City. It was built jointly by the Chicago, Milwaukee, St. Paul & Pacific Railroad and the Chicago, Rock Island & Pacific Railway, at a cost of approximately $2,250,000 for the bridge itself, and of $3,000,000 in all for the bridge and its approaches. Construction required the installation of 4,300 tons of structural steel, 275 tons of machinery, 400 tons of steel reinforcement, 15,000 cu. yd. of concrete, and 66,000 ft. of timber piles. The chief engineering feature of the bridge is a vertical-lift opening span, 420 ft. across, flanked by three 150-ft. fixed spans; the remainder of the bridge consists of 17 deck plate-girder spans of 78 ft. and one of 45 ft.; the total length of the structure is 2,615 ft. The vertical-lift span, when open, provides a clearance of 70 ft. above low water, from a normal clearance of 34 ft., so that the total lift is 36 ft.; electric power is used, with provision for emergency operation, if required, by a petrol motor. Automatic signalling controls assure the safety of approaching trains if the bridge is open or about to be opened. The reinforced concrete piers of the bridge were sunk by the pneumatic process to a stratum of shale 70 ft. below low water. Named in honour of the new President of the United States the Harry S. Truman Bridge, the new structure, which as a result of war delays, has taken three years to complete, greatly improves the access of both the owning companies to Kansas City.

SWITZERLAND

Gotthard Line Improvement

Work is in hand on various sections of the Gotthard line to improve the capacity of Switzerland's most important north-south route. The laying of the second track, begun in 1944, proved extremely difficult on the 3¾ mile section from Brunnen to Sisikon, where the line skirts the shore of the Lake of Lucerne. The only solution was to drive two tunnels for the second track. The southern (Frohnalp) tunnel which is 9,158 ft. long is not yet wholly pierced and the northern (Morschach) tunnel is 4,510 ft. long. The southern tunnel ends close to the north of Sisikon station. From this station to the south the second track is in operation as far as Rivera-Bironico, a distance of 10 6¾ miles from Sisikon. From Rivera-Bironico to Mezzovico (formerly a service loop now converted into a halt), a distance of 1¾ mile, the second track is nearly completed, while work is less advanced between Mezzovico and the next station, Taverne-Torricella, 3 miles further south. From May 7, a new halt, Lugano-Paradiso, has been open for the convenience of the southern part of Lugano. The halt is 1¼ miles to the south of Lugano Station, and is under the viaduct carrying the electric funicular of the Monte San Salvatore. On the section of the Gotthard line to the north of Zug the Litti block post at the southern exit of the 2-mile Albis Tunnel (the northern end of which is close to the south of Sihlbrugg Station) has been converted to a service loop easing the traffic conditions for 4¼ miles between Sihlbrugg and Baar, to the south of Sihlbrugg, and thereby increasing the capacity of the line between Thalwil (on the Zurich Lake) and Baar, a distance of 9¼ miles.

Financial Reconstruction of Lötschberg Group Railways

The financial position of the standard-gauge Berne-Gürbetal-Schwarzenburg Railway is to undergo reconstruction in accordance with a scheme laid before the Swiss Federal and Berne Cantonal authorities. Reference to the formation of this company by the merger of the Berne-Schwarzenburg Railway with the Gürbetal line (Berne-Belp-Thoune) was made in *The Railway Gazette* of July 6.

To cover the unfavourable balance of the Gürbetal Railway, amounting to fr. 4,220,000, and of the Berne-Schwarzenburg Railway, amounting to fr. 2,390,000, the nominal value of their shares is to be

reduced The financial reconstruction is designed to relieve the two railways of a burden of fr. 5,420,000, but there will remain a fixed liability, of fr. 650,000 representing a share of their electrification loan. Interest on it, however, will vary in accordance with working results.

Shortage of Goods Wagons

The wagon position in Switzerland has been getting worse in recent months, partly because foreign railways are still unable to dispense with the use of Swiss wagons for consignments to Switzerland. In June, the Swiss Federal Railways were compelled to send 3,250 wagons to France to carry imports. Some of these wagons were used for exports to France and beyond, but many were retained for a month or more.

The Swiss home traffic also is absorbing a greater number of wagons. In addition to the seasonal demand for the fruit and vegetables traffic, there are the requirements of the Swiss army demobilisation. Further, the lost imports of coal entail an increase in the Swiss output of peat, some 500,000 metric tons of which will have to be moved by the Swiss railways this summer compared with 320,000 metric tons in 1944.

The conveyance of peat, which must be effected within five months, requires 25,000 20-ton-wagons, or 200 wagons a day. The potato crop and the sugar-beet traffic will absorb another 500 wagons a day. In addition, the conveyance of more than 35,300,000 cu. ft. of firewood is also envisaged.

To deal with the shortage of rolling stock, the Swiss Federal Railways have set up a special organisation to speed up traffic. The number of night goods trains has been substantially increased and goods trains operate also on Sundays. Empty goods wagons, where feasible, are attached to fast trains to reach their loading stations with the minimum loss of time. Repairs to goods wagons are being speeded up and those which had been withdrawn from traffic and condemned because of over-age are being reconditioned and put back into circulation.

FRANCE

French Railway Deficit

At the annual meeting of shareholders on June 29, the French National Railways Company (S.N.C.F.) reported a deficit of 30,000 million francs (£150,000,000 at 200 francs to the £) for the year 1944. Before the meeting there were rumours that an increase of 100 per cent. in passenger and goods tariffs would be necessary to cover part of the heavy financial losses. Consternation at the possibility of such a blow to French economic recovery was allayed only by Government assurances that other means would be taken to deal with the deficit.

It was obvious that a national railway loan might be proposed as a remedy, but under the statutes of the S.N.C.F. the company could not have recourse to a loan. Accordingly it would be necessary to raise rates to cover losses, but as higher rates would be quite ineffectual in present circumstances, the company approved a modification of the statutes to authorise a loan. So far there has been no further talk of a loan, and it may be that, under the Government financing plans, credits may be provided for in some other manner.

War-Operation Losses

M. René Mayer, Minister of Public Works, in a debate on the railway deficit intimated that the S.N.C.F. had asked for an increase in rates, but that the Government had no intention of authorising any further rise in tariffs at present, because it was anxious to maintain prices in general at the existing level.

The Minister recalled that at the outset of 1944 the situation of the S.N.C.F. was not unfavourable. But the war operations, the stoppage of rail transport, and the dislocation of the railway systems in the second half of the year had entirely upset railway finances. The difficulties were increased by the rise in wages and the cost of materials.

In 1945, the Minister added, there would be a further deficit. Railway traffic is still limited and unprofitable because of working difficulties. Apart from technical improvements, the real remedy for the financial plight of the railways is a substantial recovery in the industrial life of the country and a consequent increase in the volume of traffic. Industrial recovery, it is pointed out in other quarters, depends largely on imports of raw materials, and, in the first place, on coal. One official estimate puts the necessary coal imports at 1,200,000 tons a month.

Wagon Loadings

French coal mines, in the week ended July 22, produced 630,000 tons. In addition to the national output, France was allocated by the European Coal Committee in London, 400,000 tons for the month of August. Half of this amount was to come from Germany and half from Britain. The United States has also decided to send France about 300,000 tons a month until the end of the year, to replace the French coal requisitioned by the American Army. Coal supplies will stimulate manufacturing activities and benefit the railways.

S.N.C.F. wagon loadings are considered satisfactory in present circumstances. The total for the week ended July 22 was 110,208 wagons for commercial traffic only. This figure compares with 78,475 wagons in the first week of 1945. In the south-east of France, military traffic absorbed a large part of the railway tractive power.

Railway construction, aided by a considerable amount of material imported by the Allied armies, continues to make progress. By mid-June this year, 1,730 damaged railway structures had been restored to use and 1,430 miles of railway tracks and 6,000 permanent way installations had been replaced or repaired. Damaged depots, workshops and stations, provisionally repaired, are again in working order. The steam locomotives in running condition now number 6,700 and the total will rise to more than 7,000 by the end of the year. It is hoped also to acquire soon some of the 3,350 engines taken away by the Germans since 1940. The authorities have also acquired 2,400 trucks ordered by the Germans and under construction in France. Nearly 270,000 wagons will be available by the end of 1945.

Anglo-French Ferry Traffic

Preparations for the resumption of the ferry-boat traffic between England and France apparently are in progress. M. René Mayer recently visited the port of Dunkirk and inspected the new ferry-boat station. The entrance to the port is still partly obstructed by the obstacles left by the Germans, but the new station can be made available readily for traffic.

Railway Congress in Paris

On August 5, 6 and 7 the National Federation of Railway Workers held its first congress in Paris since 1938, and 1,500 delegates, representing 370,000 members, attended from all parts of France, Alsace, and Algeria.

The report which was presented to the congress by M. Tournemaine, the General Secretary, reviewed the event since 1938 and stated that during the occupation 450 railwaymen were shot by the Germans, while thousands were imprisoned, tortured by the Gestapo, and sent to concentration camps in Germany, where hundreds were assassinated by the Nazis. The railwaymen led the strike on August 10, which quickly closed the Paris terminal stations.

This was followed by the police strike on August 15, and the general insurrection leading to the liberation of Paris. Since the liberation, the railwaymen have taken up reconstruction work as a national duty. Many have worked voluntarily 54 hours a week in the repair shops and depots. At the opening session of the congress, a number of delegates urged the continuance of the reconstruction efforts. One Paris representative, M. Lutgen, made a particularly incisive speech, warning his hearers to avoid agitation and to take a truly democratic decision in favour of augmenting national production. Railwaymen, he said, should do their best to improve all branches of railway work and he advocated national organisation of all forms of transport.

M. René Mayer, addressing the congress, said that the railwaymen had set an example to all Frenchmen and added that without increased production no governmental measures could have any tangible results.

CEYLON

Replacement of Rolling Stock

In response to a request for particulars, the minimum requirements of the Ceylon Railway for the replacement of its depleted and worn out rolling stock, have been placed before the Secretary of State for the Colonies by the Minister of Communications & Works, Mr. J. L. Kotalawala. Of the orders placed by the railway for locomotives, wagons, and other rolling stock during the last five years, few have been executed, except for the delivery of six engines indented for in 1940-41.

The essentials asked for by the Minister of Works are additional to the stocks which have been indented for since 1940-41. These requirements are 18 locomotives, 12 passenger coaches, 129 wagons and 14 boilers. Replacements are required in respect of 11 locomotives, 5 boilers, 82 passenger coaches and 1,142 wagons.

Altogether, about 20 locomotives have been indented for by the railway since 1940-41 but of these only six have been received. Of the balance of 14 locomotives it is not expected that more than eight will be delivered in the United Kingdom in the course of this year. Of these, four locomotives were among those ordered in 1940-41 and they are expected to arrive in Ceylon shortly.

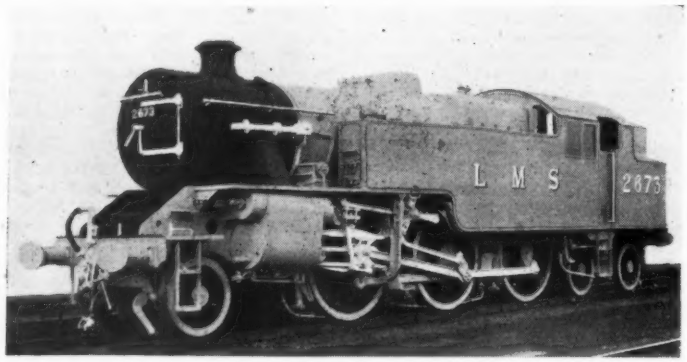
In addition to these supplies, steps are also to be taken, in the next financial year, to import 23 railcars. Eight railcars were ordered in 1939-40, six in 1941-42 and three in 1942-43, but none of these has been received.

The Crown Agents for the Colonies have explained that because of the rise in the cost of railcars the money provided was sufficient to build only 12. In consequence it is proposed to ask for additional expenditure and to order 23 cars in all. Of all these requirements the most pressing need of the railway is for locomotives and wagons.

XUM

New 2-6-4 Tank Locomotives, L.M.S.R.

Modifications to existing designs effect a saving in weight and permit an increased sphere of service



THE 2-6-4 wheel arrangement for tank engines was introduced on the L.M.S.R. by the late Sir Henry Fowler in 1927; the first of the type was No. 2300. These engines were intended for suburban traffic and for semi-fast working on the main line, and successfully worked trains at speeds up to 70 m.p.h. Much of their work was on passenger trains, and for that reason the earlier engines of the class were painted red, but they were quite capable of working freight trains within the limits of their water capacity.

Certain improvements have been made on the original design in the later batches of these engines, but the 5-ft. 9-in. coupled wheels and the general proportions have remained unaltered. The first 125 engines carried a Midland type of boiler with a parallel barrel; and the first major modification to the design was made by Sir William Stanier, after his appointment to the office of Chief Mechanical Engineer, by fitting a taper boiler, of increased steaming capacity. The cylinders were also redesigned and their diameter was increased by $\frac{5}{8}$ in. Solid-steel axleboxes with pressed-in brasses replaced the original type, and a much improved smokebox, with saddle, was fitted. Further modifications included a better type of coal bunker, which gave an improved look-out when running backwards; and a side-window cab. The riding qualities of the engines, though originally quite good, were improved by the provision of spring side control for pony trucks and bogies, and the fitting of side bolsters under the engine frames, to transmit the weight to these wheels. The result was a very smooth-running engine; altogether 206 of this modified type were built.

The latest modifications to this well-tried design have been made by Mr. C. E. Fairburn, Chief Mechanical & Electrical Engineer of the L.M.S.R. The first engine to appear with these new features is No. 2673, one of an order for 45 engines of this type, now under construction at Derby. The chief modification is a reduction in the coupled wheelbase from 16 ft. 6 in. to 15 ft. 4 in. This was done to enable the engines to travel freely round 5-ch. curves; with the former wheelbase, the minimum radius which they could negotiate safely was 6 ch.

To avoid increasing the weight per foot run which would have resulted from this step, the whole design was overhauled with the aim of eliminating superfluous weight. Evidence of this is found in the footplate angle merging into the tank side, and in the substitution of short vertical ladders in place of footsteps of conventional pattern. The light weight of the engine has been reduced accordingly by 3 tons 8 cwt. Composite riveted and welded construction has been introduced into tanks and bunkers; and hornblocks have replaced separate horn guides for the driving wheels; spring design for the coupled wheels has been modified, and alterations have been made to the frame clips below the axlebox gaps.

Care was taken to ensure that all wearing parts on the new engines should be interchangeable with those on existing engines of the same type. The new engines, despite limitations imposed by an axle load of only 17 tons 2 cwt. are of powerful and compact design, and are classified as "4P." The principal dimensions are:—

Cylinders (2) dia. stroke	19 in. × 26 in.
Coupled wheels, dia.	5 ft. 9 in.
Wheel-base, rigid	15 ft 4 in.
Axleload (maximum)	17 tons 2 cwt.
Adhesive weight	50 tons 13 cwt.
Boiler pressure	200 lb. per sq. in.
Tractive effort at 85 per cent. b.p.	24,670 lb.
Adhesion factor	4·59
Boiler—	
Outside dia. at largest ring ...	5 ft. 3 in.
Minimum dia. at largest ring ...	4 ft. 9 in.
Length between tubeplates ...	12 ft. 3 in.
Firebox—outside dimensions ...	8 ft. 6 in × 4 ft. 0½ in.
Heating surface—	
Tubes—21 flue, 157 small ...	1,223 sq. ft.
Firebox	143 sq. ft.
Total evaporative	1,366 sq. ft.
Superheater	230 sq. ft.
Total	1,596 sq. ft.
Grate area	26·7 sq. ft.
Braking ratio	45·15 per cent.
Total weight, empty	68 tons 18 cwt.
" " loaded	85 tons 5 cwt.

The following table summarises the chief differences between the various classes of two-cylinder 2-6-4 tanks of this general design on the L.M.S.R.

—	Fowler	Stanier	Fairburn
Cylinders, dia. × stroke	19 in. × 26 in.	19½ in. × 26 in.	19½ in. × 26 in.
Boiler, out. dia. (maximum)	4 ft. 9⅛ in.	5 ft. 3 in.	5 ft. 3 in.
Heating surface—			
Tubes ...	1,082 sq. ft.	1,223 sq. ft.	1,223 sq. ft.
Firebox ...	138 sq. ft.	143 sq. ft.	143 sq. ft.
Total ...	1,220 sq. ft.	1,366 sq. ft.	1,366 sq. ft.
Superheater	246 sq. ft.	230 sq. ft.	230 sq. ft.
Grate area ...	25 sq. ft.	26·7 sq. ft.	26·7 sq. ft.
Tractive effort at 85 per cent.b.p.	23,125 lb.	24,670 lb.	24,670 lb.
Weight—			
Light ...	69 tons 8 cwt.	72 tons 6 cwt.	68tons 18cwt.
Loaded ...	86 tons 5 cwt.	87tons 17cwt.	85 tons 5 cwt.

DEMANDS FOR RAILWAY TRANSPORT.—The demands for railway transport facilities are heavier than at any period in the history of the South African Railways, and it is not possible to meet all requirements with the equipment available.

Engine-power difficulties, sickness among the staff and shortage of rolling stock have contributed to the Administration's difficulties. Nevertheless, the railways loaded 83,222 wagons during the last week in June, an increase of 12,034 compared with the corresponding week of last year.

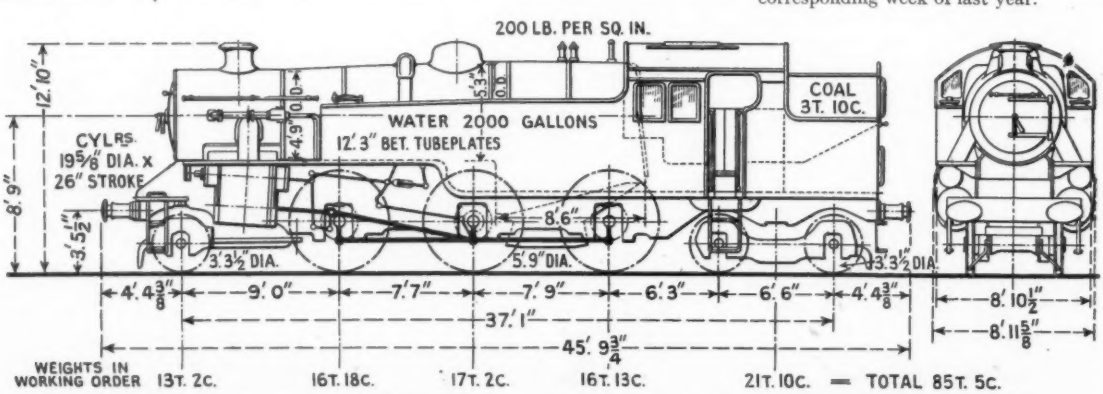


Diagram showing principal dimensions and weights of the new 2-6-4 tank locomotives, L.M.S.R.

Restoring Rail Communication after Floods in Sind

Describing the pile bridges constructed on the North Western Railway (India) in 1942, to span the breaches on both banks of the Indus

IN July, 1942, serious flooding occurred north of Sukkur in the valley of the river Indus. On July 23, the Lahore-Karachi main line of the North Western Railway was breached about six miles north of Rohri. Through communication was interrupted, but with footpaths of planks laid on the steel sleepers keyed to the 90-lb. flat-bottom rails, which hung in festoons over the 80-ft.-long gap in the embankment, transhipment was made possible. An open-deck bridge of one 20-ft. compound r.s.b. and two 40-ft. plate girder spans, supported on timber piles, was built, and single-line working was restored on August 1. Subsequently, when the river marginal bunds on the left bank of the Indus were repaired and the breach dried up, a bridge of similar spans on standard interchangeable staging, founded on rafts of rails embedded in concrete, was built for the up line, and double-line working was restored at the beginning of September.

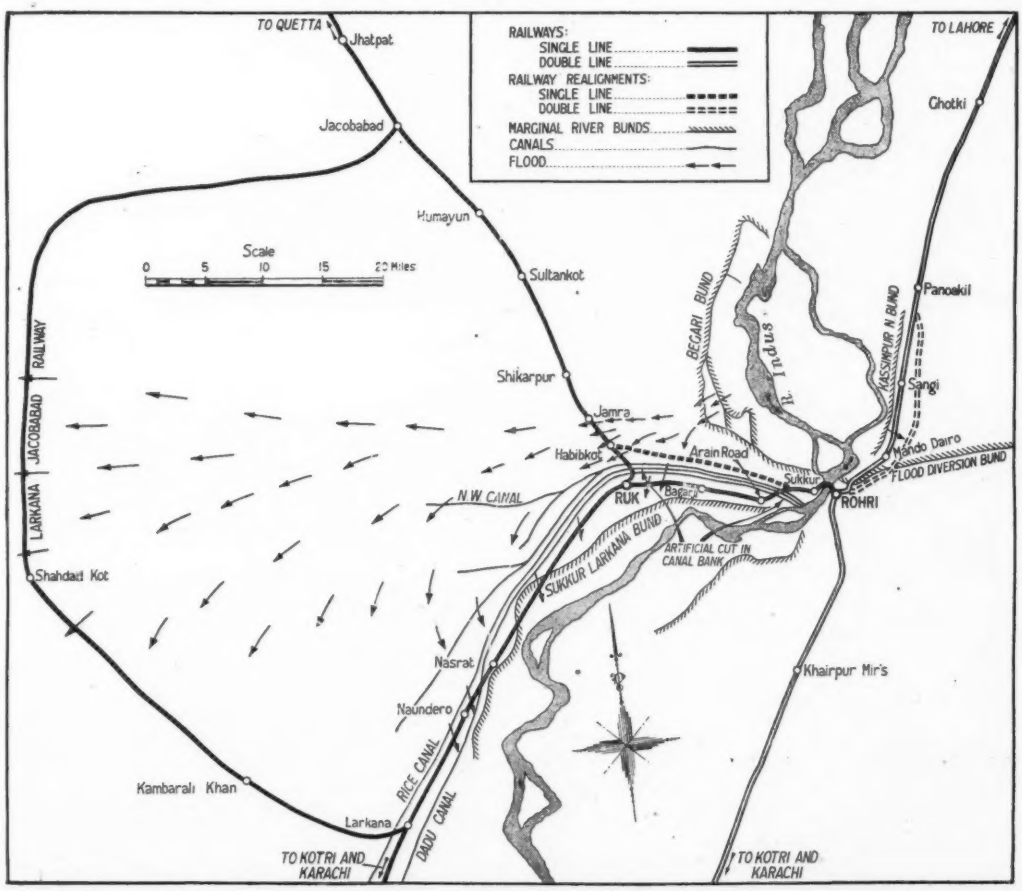
The flooding on the right bank of the Indus was much more extensive and, at one time, one quarter of the whole volume of water in the river was sweeping across Upper Sind between Sukkur and Shikarpur, Breaches quickly developed, and Ruk was cut off on all three sides on July 24. For nine days traffic to and from Quetta was diverted over the Larkana-Jacobabad loop, but later, when 37 miles of that line became submerged, all rail communication was interrupted between Baluchistan and the rest of India. It was not until towards the end of November that through running was restored *via* Ruk and Shikarpur. Repairs to the Larkana-Jacobabad line had to be deferred until the flood water had subsided, and that line was not reopened to traffic until January, 1943.

The longest and deepest breach in the railway was at a point 14½ miles from Rohri. This breach was nearly 1,000 ft. long with a rapidly-diminishing island near the middle. The water was 34 ft. deep in parts, and it raced through the gap at 11 ft. p.s. By raising the track 6 in., there was just enough headroom to build a bridge of 20-ft. compound r.s.b. spans resting on joists bolted to the tops of clusters of piles. Later, after 20 of these small spans had been erected, the water subsided sufficiently to enable a change over to be made to deeper 40-ft. plate girder spans. The 75-lb. f.b. rails with most of the timber sleepers still attached, hung in a festoon across the breach. This track was lifted bit by bit as the girders of the bridge were slipped in under it.

The piling equipment consisted of four No. 7 McKiernan Terry steam hammers and a 25-ton bridge-erecting crane. Fitted with a special 69-ft. jib, this crane was able to handle 6 tons at a range of 33½ ft. ahead of the buffer-beam with the hook 50 ft. above rail level.

The piles, some 12 in. in diameter and others 12 in. square, were of *asna*, *sain*, and *sal* timber from the United Provinces. Lengths varied between 25 and 40 ft. The piles were driven into a bed of firm clay. Only in the first two clusters, where pitching stone was likely to be encountered, were shoes fitted to the piles. The square timbers were used in the deeper water where two pieces were scarfed together to give lengths up to 57 ft.

In driving the piles in the first two clusters it was possible to hold them reasonably plumb with hemp-rope guys; but, as the work progressed, it became increasingly difficult to locate the piles properly and hold them vertical against the swift current. So a steel framework was fitted to the crane to guide the piles during driving. Steam for working the hammer was taken from the boiler of a locomotive standing some distance in rear of the crane. Driving was stopped when the penetration of a pile did not exceed ½ in. under 200 blows of the No. 7 hammer with a steam pressure of 100 lb. per sq. in. In the shallower water, piles were driven from 15 to 20 ft. into the bed, but in deeper water, where the number of piles in each cluster under the 20-ft. spans was increased from six to ten, the piles penetrated 12 to 15 ft. into the clay. Diagonal



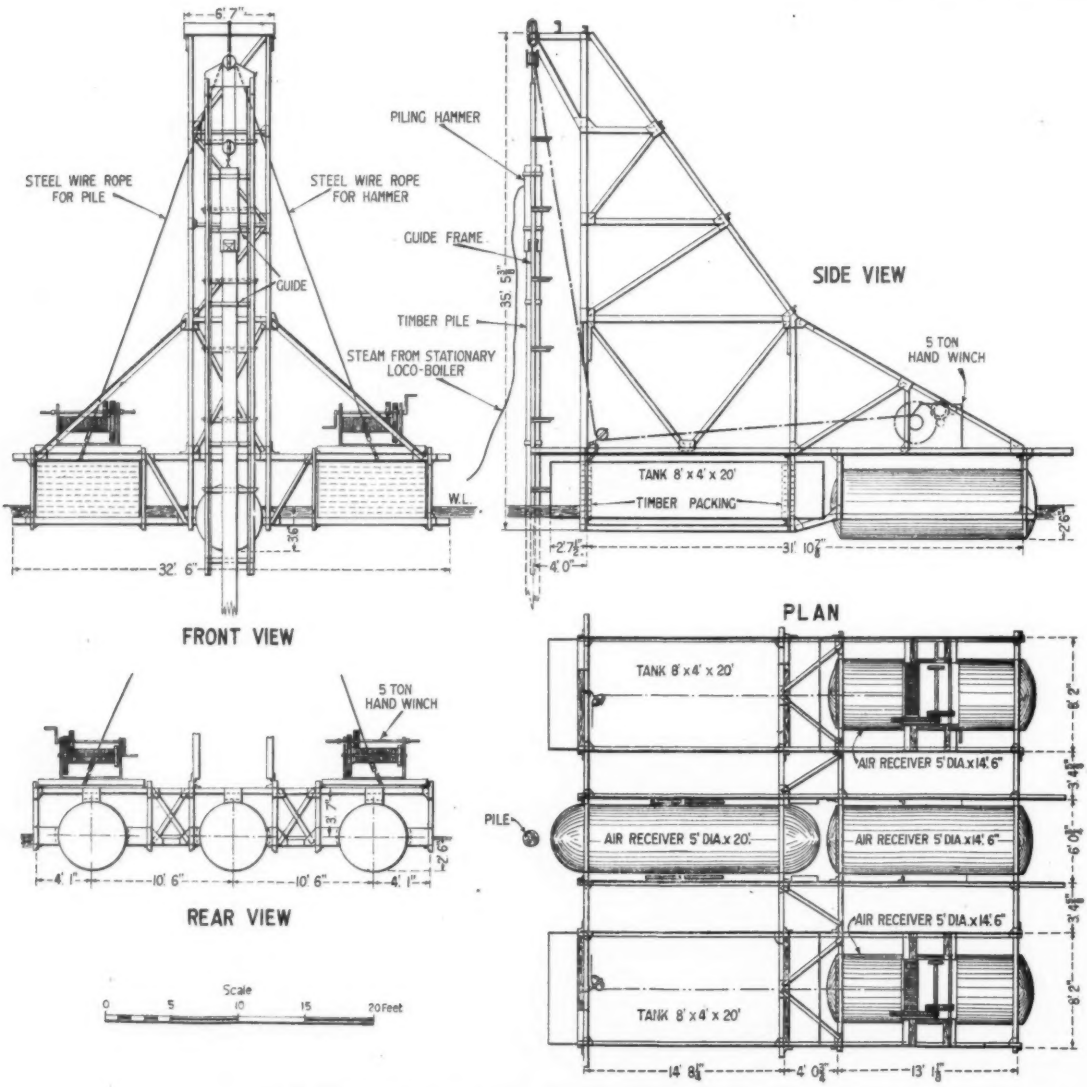
Sketch map showing the various sections of line affected by the floods and the retirement realignments



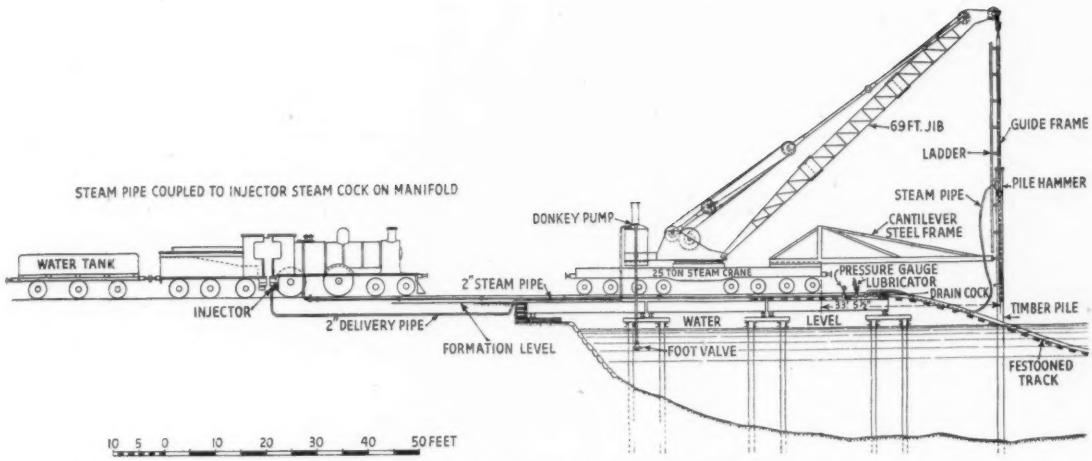
The pendulum piling pontoon. Getting ready to drive a pile

bracings, consisting of old double-head rails, were bolted to the extreme upstream and downstream piles when the depth of water exceeded 25 ft. The long piles were scarfed before being driven; and, after driving, those joints still above the bed were buried to a depth of 8 ft. in pitching stone before the heavy crane with its 19-ton axle loads was allowed on to the span resting on those particular piles.

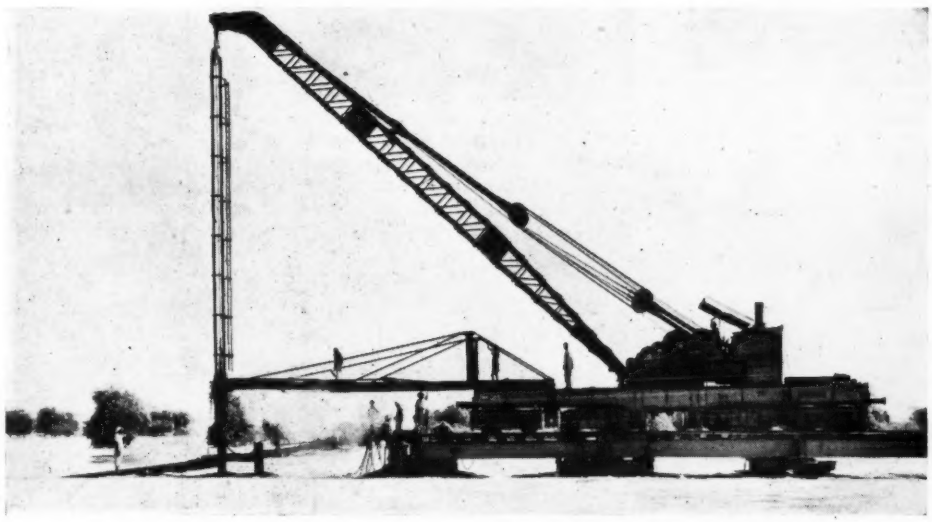
When the water subsided and the current became less swift, a second piling hammer, operating from a pontoon, was brought into use. This pontoon, hastily made up out of plant available at Sukkur, consisted of two rectangular water tanks and three compressed-air receivers held together with a framework of steel angles rising to form a tower from which a pile-driving guide, similar to that used on the crane, hung pendulum fashion at the front. As the pontoon drew 2 ft. 6 in. of water, it could be used only where the festooned track was deep enough below the surface. In spite of certain difficulties encountered in threading the piles down between the sleepers and rails, the pontoon proved well



Details of the pendulum piling pontoon assembly



25-ton steam crane adapted for pile driving with guide frame and steam pipe-line from locomotive



The guide frame in use, piling in deep water



Piling with two hammers simultaneously. The pontoon and the crane in action

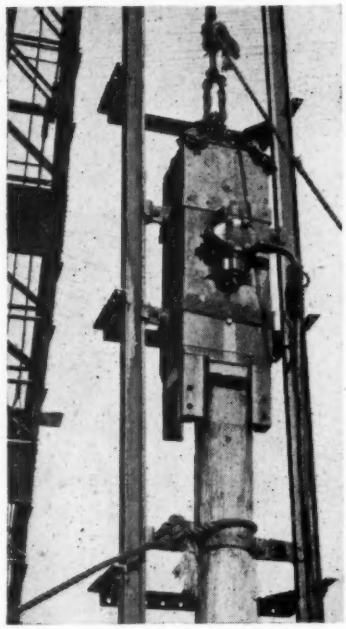
worth the labour involved, and the rate of bridging was almost doubled.

In all, 259 piles were driven at this 1,000-ft. breach; and, of these, only one was broken. That particular one was left in and another was driven alongside. Work on this bridge began on August 24, and the last of the 40-ft. spans was in position by October 13; work was carried on continuously day and night. Progress was slow when stone had to be thrown in around the piles, as much of it was carried some way downstream, and it took a long time before the necessary depth of stone could be built up around the piles. When no stone had to be thrown in, progress averaged one-and-a-half 20-ft. spans (nine piles driven) or one 40-ft. span (nine piles driven) in 24 hr.

The whole of the pile bridging—altogether it amounted to half a mile—was carried out by the staff of the Bridge Branch of the N.W.R. under the direction of Mr. S. M. Johnson, M.C., Deputy Chief Engineer, Bridges.

The widespread flooding made it impossible to "borrow" locally, and those breaches which were not bridged were filled in with quarry refuse brought from Sukkur to railhead by train. This work was done by contract, and because of the heavy demand on labour by the Public Works Department and other services, there were difficulties and delays. Eventually, through rail communication to Quetta was restored on November 22.

To minimise the likelihood of similar breaches occurring in future years, the main line north of Rohri is being realigned, and the new route between Rohri and Pano Akil will be much further away from the Indus. On the other side of the river, a new alignment on the north of the canals is to be opened during 1945. This will leave the present line three miles west of Sukkur and will join the old line at Habibkot where a new junction will take the place of the old one at Ruk. The line between Ruk and Habibkot and between Habibkot and Jamra has been raised and a number of new brick masonry arch bridges have been built to pass flood water.



A No. 7 McKiernan Terry hammer and a pile between the vertical guide rails. Note the hinged clamp bearings against the head of the rail on the right of the pile

ACQUISITION AND DISPOSAL OF LEAD.—The Ministry of Supply has issued an announcement that applications to the Non-Ferrous Metals Control for licences to acquire lead for U.K. consumption will be considered by the Control without restrictions in respect of the type of article to be manufactured. The statutory provisions concerning the acquisition and disposal of lead are still in force, but it is no longer necessary to submit schedules of Service or home civil orders with applications for licences of lead. Instead of the previous procedure each application must be accompanied by the following signed statement:—

> "We certify that the quantity requested on the accompanying application is needed to cover orders for our products, and that in the case of applications for virgin metal full allowance has been made for our expected intake of scrap."

Certain restrictions on the release of lead for export remain in operation, and schedules of export order must continue to be submitted.

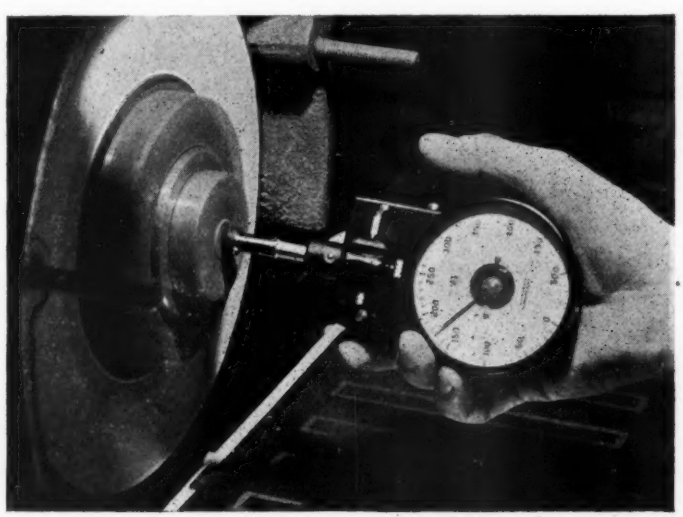
A British-Made Tachometer

A hand instrument of the compensated magnetic type

THE design of the hand tachometer illustrated is based on the well-known A.T. speedometer fitted in British tanks, armoured cars and other vehicles. The instrument is of the compensated magnetic type and its mechanism comprises a rotating permanent magnet which actuates an aluminium drum carrying a pointer. The magnet is of special alloy-steel and is designed to eliminate, over a wide range, the effects of temperature changes. The drum and pointer assembly is mounted on jewelled bearings, and is controlled by a hairspring. The casing is a light-alloy die-casting which also forms the main frame of the instrument.

The speed range of the tachometer is provided by a gearbox within the casing, and ranges are selected by turning a knurled knob. Direct readings can be taken up to 500 r.p.m.; for speeds between zero and 5,000 r.p.m. the scale value is multiplied by 10, or by 100 for speeds between zero and 50,000 r.p.m. To provide uni-directional drive to the magnet, irrespective of the direction of rotation of the test shaft, an idler gear and rocking arm are provided. Another feature is the provision of push-button control to lock the indicating pointer while running. This permits of remote reading and is especially useful for checking shaft speeds in inaccessible positions. On depressing a push-button on the opposite side of the casing the pointer returns to zero.

The driven spindle has a hardened squared end for use as a driving centre at low speeds. Detachable male and female rubber centres are also supplied, together with a disc for measuring surface and cutting speeds on machine tools. The A.T. hand tachometer is made by Smith's Industrial Instruments Limited, London, N.W.2.



The A.T. Hand Tachometer in use checking the speed of a grinding wheel spindle

L.N.E.R. Third Class Corridor Coach

An improved vehicle for main-line service

A NEW type of third class corridor coach, briefly referred to in our June 8 issue, and similar in design to a first class vehicle put into service at the beginning of the year and described and illustrated in our January 19 issue, has recently been completed by the L.N.E.R. Together these coaches form the prototypes of the main-line coaches the company is to build in the immediate post-war years.

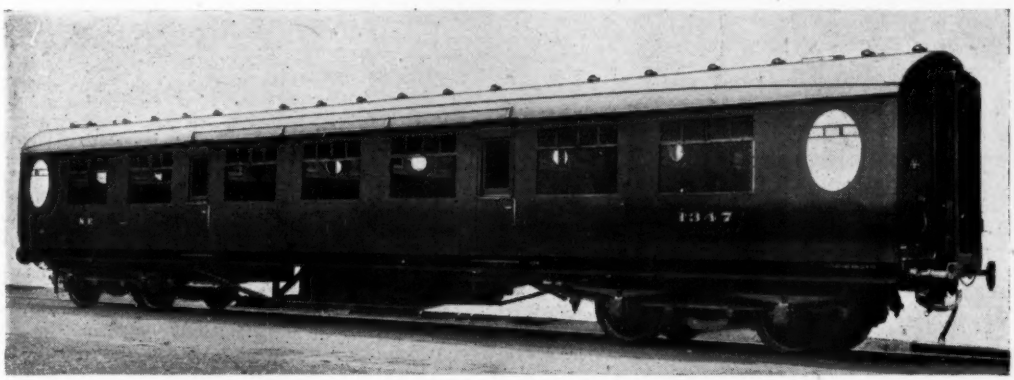
The new coach contains seven compartments measuring 6 ft. 6 in. between the partitions, arranged in three groups separated by two transverse corridors. The end groups each consist of two compartments and the centre group has three compartments, so that the distance from any compartment to the exit doors of the coach is reduced to a minimum, thus facilitating the rapid movement of passengers. Three seats a side, with intermediate armrests, are provided in each compartment, giving a total seating capacity of 42.

The body of the coach is constructed of teak framing with steel outer panels, and is mounted on an all-welded steel underframe 61 ft. 6 in. long. The windows in the corridor are spaced opposite the compartment windows, and are 6 in. longer and 3 in. deeper than previous standard windows in third class compartments. Sliding shutter ventilators are fitted in each compartment, and in three of the corridor windows. The end windows on each side of the vehicle are elliptical and those in the toilets are provided with sliding shutter ventilators.

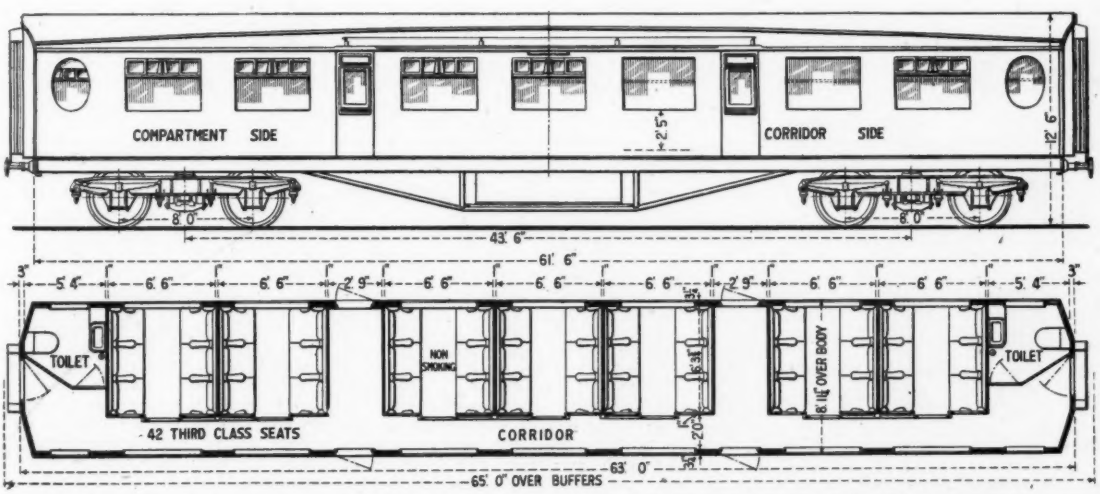
The compartments are upholstered in fawn and brown uncut moquette, and the walls and ceilings are covered in peach coloured rexine. Special seat fillings ensure an exceptionally comfortable seat. The metal fittings are spray-painted a light chocolate colour, with the exception of the roof light fitting. The roof light has a 30-watt lamp, and is supplemented by four 15-watt shoulder lights. There is a toilet compartment at each end of the coach. The walls in one toilet are covered with sheets of coloured plastic in two shades, the other is fitted with timber below the waist line, and plate glass above, with pastel coloured backing.

The bogies carrying the new vehicle have a wheelbase of 8 ft. and are of the single bolster type, of welded construction. The coach weighs 33 tons and is fitted with buckeye couplers and Pullman vestibules in accordance with L.N.E.R. standard practice.

SOUTH AFRICAN STATION IMPROVEMENTS.—In his July bulletin, Mr. C. M. Hoffe, General Manager, South African Railways & Harbours, states that better stations are needed throughout South Africa. Both in the railway capital expenditure programme approved by Parliament, and in the plans still under consideration, stations figure prominently. When the Minister of Transport, Mr. F. C. Sturrock, announced his £30,000,000 post-war programme to Parliament in 1943, he mentioned some of the larger stations which would have to be rebuilt or remodelled. These included Johannesburg, Durban, Port Elizabeth, Pretoria, and Bloemfontein. He also stated that the expenditure of £529,794 was contemplated on rural stations. Recently a large number of requests for new stations has been received. Every station will be considered on its merits, however, in the light of traffic handled. New stations will be provided where necessary, but such factors as material, manpower, and the urgency of other work cannot be ignored.



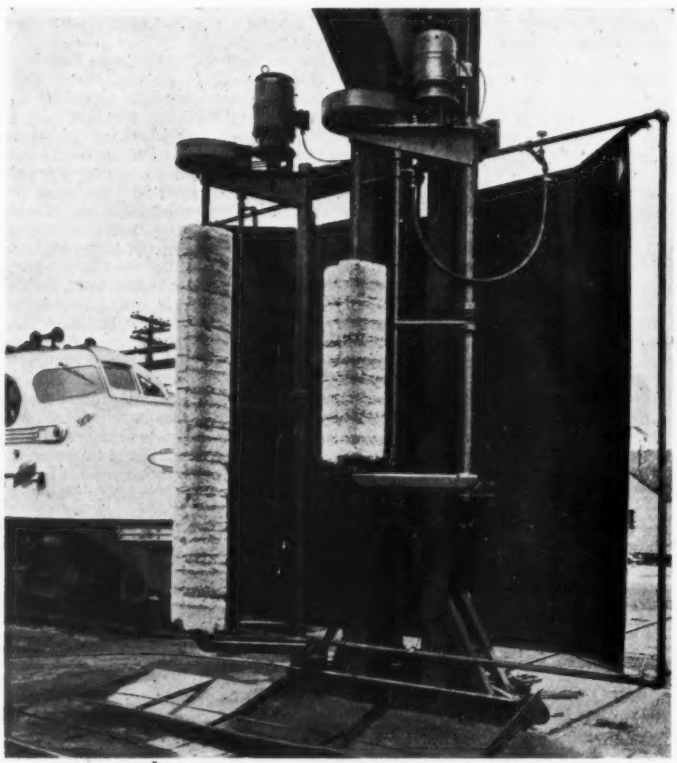
Improved type of L.N.E.R. third class corridor coach



Main dimensions and layout of L.N.E.R. coach with compartments to accommodate six passengers

An Improved Carriage Washing Plant

An electrically-operated plant which can be moved from track to track, and is equipped with self-aligning brushes to fit coach body contours



The brush support and driving mechanism, spray pipes and drip pan

A NEW method of exterior coach washing has been brought into operation recently by the Chicago & North Western Railway at the yard in Chicago where its diesel-operated streamline trains are stored and serviced. As compared with previous carriage-washing plants, this one is of particular interest in that it is portable, and can be moved laterally so as to deal with stock on any one of four parallel tracks. As the number of streamline trains to be handled as yet is limited, the plant has not dealt with more than 60 cars a day, including 12 diesel-electric locomotive units, but the capacity is considerably higher than this, and the runway on which the plant operates can be extended to cover as many tracks as may be desired additional to the original four.

The general construction of the plant is clearly seen in the illustrations. It comprises two vertical steel members, with a cross member bridging the track, the whole well braced with gussets. The bottoms of the columns are carried on four flanged wheels, which run on a track at right-angles to the coach servicing tracks, and the whole structure is moved from track to track by means of a hand winding gear. To prepare for operation on any one track, it is secured in position by four clamps hooked to fixed rings in the ground, and further by four pins engaging in holes in the transverse track, which together keep the structure rigidly held. It can be moved readily by one man.

On each side of the washer there is a vertical brush 9 ft. long and 15 in. diameter, arranged to rotate at about 240 r.p.m. and driven by a 3-h.p. electric motor. This is positioned to wash the car-bodies from the lower edge of the roofs to the bottom of the side-sheets, and is self-aligning, so that it can adjust itself to the contour of each car-body. Ahead of this is a second brush, 3 ft. 10 in. long and of the same diameter, which also operates at 240 r.p.m.; this is driven by a 2-h.p. electric motor, and is specially provided for washing the windows. The brushes are built up of fibres secured to wooden cores, and are applied in half-sections, which are bolted round a slotted driving shaft and so are prevented from turning on the shaft. The half-sections are staggered, and in this way no marks are left on the car sides by uniform horizontal breaks between brush sections.

The brushes are mounted on swinging arms, and are held against the car sides by counterweights, which exert a constant pressure; when out of use, the arms are swung back to keep the brushes out of contact with any cars that may pass through. These movements are controlled by a hand lever on the back of the structure. The brushes are kept well soaked when in use by a water-spray pipe at the back of each brush. In addition, four vertical water-pipes are arranged on both sides of the track, two at the entry to the washer and two at the exit, each with eleven $\frac{1}{2}$-in. nozzles spaced 10 in. apart; through these a copious spray of water is directed at right-angles on to the car sides both before and after the washing process proper. A single 2-in. dia. flexible hose connection supplies water to the plant at a pressure of about 40 lb. per sq. in., and splash-plates and drain-pans direct the water after use to drain openings situated directly under the washer. Push-button control for the washer motors is arranged adjacent to the lever controlling the swinging arms.

After arrival of a streamline train at Chicago, all the doors are carefully closed, and the train is backed to the car yard, and pushed through the washing plant at a speed of 80 ft. per min. The nose of each diesel locomotive and the rear end of the observation car have to be cleaned by hand; also the windows are hand-wiped after cleaning so that streaky appearance may be avoided. No attempt is made to wash the car roofs, as drippings would tend to run down after cleaning and streak the car sides. Another limitation of a plant of this description is that it is not effective in temperatures below freezing point.

If heavier cleaning is required for dirty stock, it becomes necessary to supplement the water washing by the use of oxalic acid or some other commercial cleaner, which must be distributed over the car sides and allowed time to neutralise itself before it is brushed and washed off in the plant. For this purpose two vertical stand-pipes, each with three $\frac{3}{4}$-in. spray nozzles, have been erected on either side of the track leading to the washer, at a distance of about 100 ft. The cleaning solution is carried in two 80-gal. portable tanks, and by air pressure this is forced out in fan-shaped sprays which cover the whole of the car sides. When the cleaning solution is in use, the water-sprays at the lead-in to the washing plant are turned off, as otherwise they would wash off the cleaning solution before the brushes were able to work it in. The maintenance of the 80-ft. per min. speed from the cleaning solution sprays to the washing plant is of great importance, to enable the cleaning solution to do its work, and it is equally important that the latter shall be thoroughly washed off after use, as otherwise the highly finished car body surfaces would be damaged.

Certain modifications to the plant are suggesting themselves as the result of experience. One is an increase in the number of nozzles in the exit spray pipes, and that they should be directed both ahead and back of the perpendicular, in order to flush the car sides more thoroughly than at present. A second is the installation of an electric pump to ensure that the water pressure shall not drop below 40 lb. per sq. in. A third is that refillable metal cores for the brushes, in place of the present wooden ones, might avoid the warping and breakage of the cores now in use, and enable the speed of rotation to be increased to 370 r.p.m. It is also felt that an additional pair of long brushes would permit of even more efficient cleaning in less time, in the event, as is probable, of an increase in the number of streamline diesel trains requiring attention. The plant has been built by the Whiting Corporation, Harvey, Illinois, and we are indebted to our American contemporary, the *Railway Mechanical Engineer*, for the description and the photographs reproduced.

An Improved Carriage Washing Plant in the U.S.A.



The portable carriage washer ready for a streamline train to back through under its own power



Whiting portable carriage washer positioned over one of four tracks at the Chicago & North Western Railway diesel-train servicing yard, Chicago. One train has just backed through the washer

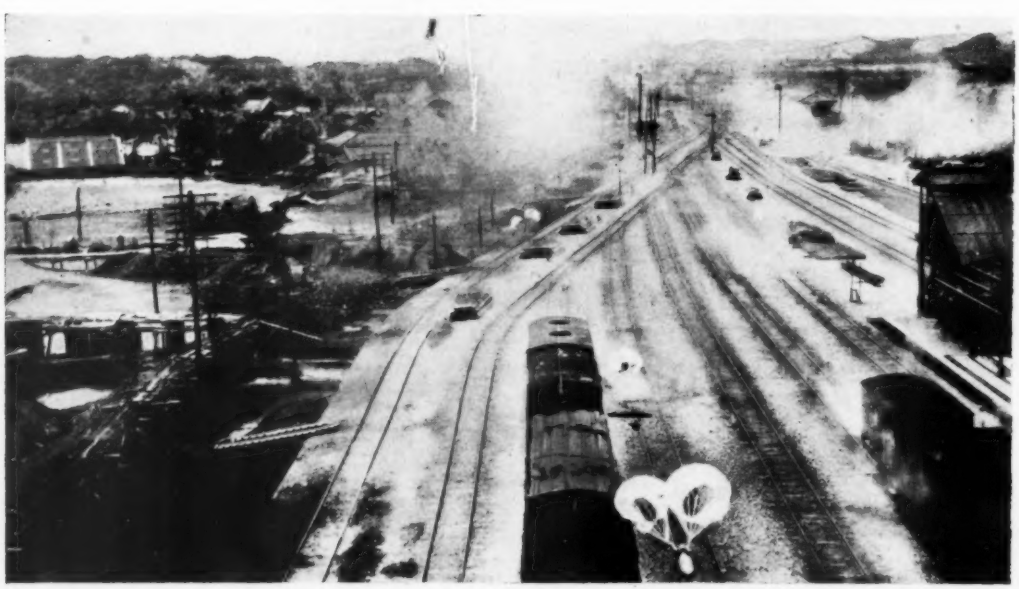
During the War in the Pacific



A single bomb from an American Mitchell bomber smashing the railway trestle near Tsusho, on the north-west coast of Formosa



Smoke and debris from the Chikonan railway yards in Formosa, during an attack by Philippine-based bombers of the 5th U.S.A. Air Force



A parafrag (parachute fragmentation bomb) descending on a stationary train in the Chikonan railway yards, Formosa. Others may be discerned falling further back

RAILWAY NEWS SECTION

PERSONAL

L.N.E.R. Staff Changes

Mr. George Mills, Divisional General Manager of the Southern Area, will retire from the company's service on September 15 next.

Mr. V. M. Barrington-Ward, C.B.E., D.S.O., Temporary Assistant General Manager (Operating), has been appointed to succeed Mr. Mills as from September 16.

Colonel Robert Adeane has been appointed a Director of the Dorada Railway Co. Ltd. and the Dorada Railway (Ropeway Extension) Limited, and of the La Guaira & Caracas Railway Co., Ltd. He is Managing Director of the Ottoman Railway Holding Co. Ltd., and a Director, among other companies, of the Buenos Ayres & Pacific Railway Co. Ltd., Costa Rica Railway Co. Ltd., Midland Railway Co. of Western Australia Ltd., and Salvador Railway Co. Ltd.

Mr. P. L. Fleming has resigned his seat on the board of the Bolivar Railway Co. Ltd., and Colonel Robert Adeane has been appointed a Director.

Mr. A. F. Kirby, General Manager of the Palestine Railways, who has been on short leave in this country, is returning to Palestine this week.

The Minister of War Transport has appointed Mr. W. E. Macve, Chief Executive (Operations), Northern Ireland Road Transport Board, as Regional Transport Commissioner, North Western Region.

The Minister of War Transport has appointed Mr. G. I. Morris to be his Private Secretary, and Miss B. J. de Livera to be his Assistant Private Secretary.

Mr. D. G. Malan has been appointed Shipping Manager, Railway Headquarters, Johannesburg.

Resignation Honours

Among honours and awards, approved by the King, arising out of Mr. Churchill's resignation, are the following:—

Private Office List

Baronet

Mr. George Steven Harvie Watt, K.C., M.P. for the Keighley Division of Yorkshire, 1931-35, and for Richmond since 1937. Parliamentary Private Secretary to the Prime Minister (Mr. Churchill), 1941-45; for political and public services. Director, Great Western Railway Company.

Political and Public Services List

Baronet

Colonel Harold Paton Mitchell, M.P. for Brentford and Chiswick, 1931-45; Vice-Chairman of the Conservative Party. Director, London & North Eastern Railway Company.

Companion of Honour

The Rt. Hon. Leopold Stennett Amery, Secretary of State for India and for Burma, 1940-45; M.P. for Sparkbrook (formerly South) Division of Birmingham, 1911-45. Formerly Director, Southern Railway Company.

Mr. W. G. Hills, General Manager of the Ceylon Government Railway, who, as recorded in our August 17 issue, proceeds on leave in October next, preparatory to retirement, was born in 1885, and is the son of Mr. W. H. Hills, sometime Superintendent of the Line of the former Great Northern Railway. It was on that line that Mr. W. G. Hills gained his early railway experience; but he was appointed District Traffic Superintendent on the Ceylon Government Railway in 1915. Within six years he rose to the position of Assistant Traffic Manager, and in February, 1924, was appointed to act as Deputy Traffic Manager; in October of that year he was promoted to act as Assistant to the General Manager. In April, 1925, Mr. Hills acted as Divisional Transportation Superintendent, a post in which he was confirmed in October, 1926. He acted as Deputy General Manager (Commercial) from December, 1930, to August, 1931; in January, 1932, the post was combined with that of Deputy General Manager (Operating), and was filled by Mr. Hills until his promotion to act as General Manager in March, 1936, on the retirement of Mr. E. W. Head, General Manager. Mr. Hills was confirmed in the appointment of General Manager in 1940.



Mr. W. G. Hills

General Manager, Ceylon Government Railway, 1940-45

We regret to record the death on August 13, at the age of 69, of the Rt. Hon. Sir Eric Clare Edmund Phipps, G.C.B., G.C.M.G., G.C.V.O., who was a Director of the Midland Bank Limited and of the Midland Bank Executor & Trustee Co. Ltd.

Mr. G. H. Brooks, Chief Staff & Welfare Officer of the London Passenger Transport Board, is retiring on August 25.

British Thomson-Houston Co. Ltd.

Mr. G. M. Campbell has relinquished the position of Director of Manufacture, but remains on the board as Adviser to the Managing Director (Mr. H. Warren).

Mr. W. W. Vinsen, Assistant Director of Manufacture, has been appointed Director of Manufacture.

Mr. H. J. Armstrong has been appointed Manager of the Coventry Works, in succession to Mr. Vinsen.

Mr. E. H. Ball, Assistant Sales Director, has relinquished the Managership of the Transformer Sales Department, to which Mr. L. G. Axe has been appointed.

Mr. G. H. Latham and Dr. C. H. Desch have resigned from the board of Richard Thomas & Baldwins Limited.

Commander Philip Baker, O.B.E., R.N. (retired) has been appointed Public Relations Officer to the British Export Trade Research Organisation.

Mr. G. A. Howard has been appointed General Supervisor of Apprentice Training, Canadian National Railways, in succession to Mr. A. H. Williams, who has retired.

Mr. John L. Harvey, formerly Joint General Works Manager of British Insulated Cables Limited, has been appointed General Works Manager of British Insulated Callender's Cables Limited.

Sir Leonard Browett has been appointed Director of the National Union of Manufacturers, in succession to Sir Charles Hipwood. Sir Leonard Browett was from 1937 to 1941 Permanent Secretary to the Ministry of Transport.

Lord Leathers has been elected Chairman of Wm. Cory & Son Ltd., in place of Sir A. C. Cory-Wright, who has retired from the Chairmanship, but remains on the board. Lord Leathers was Minister of War Transport in the Coalition Government, and continued in that office in Mr. Churchill's reconstituted Government which succeeded the Coalition.

We regret to record the death, at the age of 60, of Mr. John Earl Saunders, a well-known American signal engineer. He entered railway service in 1900 and was with the Atchison, Topeka & Santa Fe Railway System and then the Illinois Central System; he returned to the former as Assistant Signal Engineer in 1910. In 1913 he took a similar position with the Delaware, Lackawanna & Western Railroad, but shortly afterwards joined the Union Switch & Signal Company, with which he held various important appointments until returning to the Lackawanna in 1924 as Signal Engineer. That position he held until 1942, when he was given consulting rank. Mr. Saunders was Chairman of the Signal Section of the Association of American Railroads in 1933. At one time he wrote a good deal on signalling.

XUM

Mr. A. H. McMurdo, M.B.E., M.Inst.C.E., Divisional Engineer (Scotland), L.M.S.R., since 1931, who, as recorded in our August 10 issue, is retiring, received his early civil-engineering training with the Glasgow firm of Warren & Stuart. He joined the Engineer's Department of the former Glasgow & South Western Railway in 1902, at a time when a great deal of railway construction work was being carried out. In 1910 he was appointed to the Highland Railway as a General Assistant on the staff of the Chief Engineer, and in January, 1914, became Chief Assistant to the Chief Engineer of that railway. He continued in that capacity until the amalgamation in 1923, when he was appointed District Engineer for the L.M.S.R. on the Highland District. In 1929 Mr. McMurdo was appointed Permanent Way Assistant to the Chief Engineer, with headquarters at Euston, and in 1931 he was promoted to the post of Divisional Engineer (Scotland), which comprises five District Engineers' Areas north of Carlisle and includes some 2,000 route-miles of railway. Mr. McMurdo is one of the few remaining officers of the L.M.S.R. who has held important railway administrative positions during the whole period covering the two great wars. Before going to London Mr. McMurdo was Vice-President for Scotland of the Permanent Way Institution. He holds the rank of Major in the Engineer & Railway Staff Corps, R.E. (T.A.). Mr. McMurdo's two sons were trained as civil engineers, and were overseas with the Royal Engineers. The younger son (Bryce) lost his life at sea in 1943, and the elder (Lt.-Colonel A. W. McMurdo) recently was awarded the M.B.E. for services in Italy.



Photo] [Lafayette

Mr. A. H. McMurdo

Divisional Engineer (Scotland), L.M.S.R., 1931-45

Mr. Ian R. Frazer, B.Sc., A.M.Inst.C.E., District Engineer, Perth, L.M.S.R., who, as recorded in our August 10 issue, has been appointed Divisional Engineer, Glasgow, took a civil engineering degree at Edinburgh University. He entered the service of the Caledonian Railway in January, 1914, under the late Mr. Dugald McLellan, at that time District Engineer, Southern & Eastern District. Mr. Frazer served with the Armed Forces overseas from 1915 to 1920, with the 52nd Division, and latterly on the Palestine Military Railway. He was demobilised with the rank of Captain, and returned to railway service. In 1923 he went to the Divisional Engineer's Office, Glasgow, L.M.S.R., in the New Works Department, and in 1926 to the South Western District, as Senior Assistant Engineer. After a year's work on job analysis, he was appointed Assistant to District Engineer, Derby (South), in 1934, and in September, 1939, became Acting District Engineer. In March, 1940, he was appointed District Engineer, Inverness, and in August, 1941, to the corresponding post at Perth. Mr. Frazer is a former Chairman of the Notts & Derby Section of the Permanent Way Institution.



Mr. I. R. Frazer

Appointed Divisional Engineer, Glasgow, L.M.S.R.

Mr. G. C. Gold, A.M.I.Mech.E., Locomotive Works Manager, Darlington, L.N.E.R., who, as recorded in our August 17 issue, has been appointed Mechanical Engineer, Gorton, was educated at Whitgift School, Croydon, and commenced his railway career in 1920 as a premium apprentice under the late Sir Nigel Gresley at the Great Northern Railway Works, Doncaster. Four years later he went to Kings Cross Locomotive Depot for running-shed experience. In 1926 he was appointed Locomotive Inspector at York shed, and subsequently became Shed Foreman at Northallerton Locomotive Depot & Percy Main. He was selected for special training in the Operating and Goods Commercial Departments and was appointed Stationmaster at Whitby (Town & Westcliff Stations) with additional charge of the locomotive depot. In 1936, Mr. Gold was transferred to Darlington as Assistant District Locomotive Superintendent. He was appointed Acting District Locomotive Superintendent in 1940, and Assistant Works Manager, North Road Works, Darlington, in 1942, and was made Works Manager during the same year.



Mr. G. C. Gold

Appointed Mechanical Engineer, Gorton, L.N.E.R.

Mr. A. R. Jefferson, A.M.I.Mech.E., Acting District Locomotive Superintendent, Newcastle, L.N.E.R., who, as recorded in our August 10 issue, has been appointed District Locomotive Superintendent, Darlington, was educated at Ackworth School, Yorkshire, and at Doncaster Technical College. In 1919 he became a premium apprentice to the late Sir Nigel Gresley at Doncaster, Great Northern Railway, where he gained experience in various sections of the works and drawing offices; later he obtained experience also at the locomotive sheds at Peterborough and Stratford. In 1927 he was appointed Fitter-in-Charge, Leicester Locomotive Shed, and in 1928 became Assistant Running Shed Foreman, New England, Peterborough. A year later he was made Running Shed Foreman at Tuxford, and in 1930 was appointed Junior Technical Assistant to the Locomotive Running Superintendent for the Southern Area. In 1934 Mr. Jefferson became Assistant District Locomotive Superintendent, Ardsley, and three years later took up a similar position at Heaton. In 1939 he became Technical Assistant to the Locomotive Running Superintendent, North Eastern Area, at York, and in 1942 was appointed Acting Assistant Locomotive Running Superintendent, Scottish Area. Mr. Jefferson became Acting District Locomotive Superintendent, Newcastle, in June, 1943.



Mr. A. R. Jefferson

Appointed District Locomotive Superintendent, Darlington, L.N.E.R.

TRANSPORT SERVICES AND THE WAR—308

Railway Reconstruction in Russia

The Germans are reported to have destroyed 30,000 miles of railway track and 1,000 bridges in Soviet Russia during the war, and this year the Soviet Government plans to expend 4,000,000,000 roubles on railway reconstruction and development. Priority areas are the important industrial districts of the Donetz Basin, the Urals, and Siberia.

Goods-Wagon Loadings in India

During the period April 1, 1944, to February 20, 1945, the tonnage conveyed on Class 1 railways over broad-gauge lines increased 1·84 per cent. over the preceding corresponding period, and totalled 61,877,934 tons. The increase in tonnage carried on narrow-gauge lines was 12·2 per cent., the total being 17,165,967 tons. Ordinary goods traffic over broad-gauge lines increased 3·97 per cent. and over narrow-gauge 7·73 per cent. The comparable percentages for military traffic were 65·1 per cent. and 347·3 per cent. respectively.

European Inland Transport : Regional Offices

The Provisional Executive for European Inland Transport has announced that regional offices have now been set up in Paris, Brussels, and the Hague.

The Paris Office is under the directorship of M. Jean Tuja, formerly Operating Manager of the French National Railways. Temporary premises have been found by the courtesy of the International Union of Railways at 10, Rue de Prony, Paris VII, near the Parc Monceau.

The Brussels Office is under the directorship of M. R. L. Dévooght, Secretary General of the Belgian National Transport Control Board, which has assisted the organisation by providing accommodation temporarily at its headquarters, 12, Rue de la Science, Brussels. Mr. Van Walle is Assistant Director.

The Hague Office will be under the directorship of Lt.-Cdr. John Prins, U.S.N.R. Pending his return from the United States, the office will be run by Mr. W. C. D. Hearman and Mr. A. Van Lutzenburg-Maas. The headquarters are at 14, Parkstraat.

Railways in South Western Germany

A trip through south-western Germany affords convincing proof that the prolonged Allied bombing, to which the country's railway system was exposed, was extremely effective, writes a Swiss correspondent. Extensive portions of the railway system were bombed to a standstill if not out of existence. The main station of Stuttgart with its marshalling yards, goods yards, and other plant is still a wild tangle of blocks of reinforced concrete, twisted steel structures, coiled electric overhead systems, uprooted tracks and rails, and heaps of smashed wagons. On the other hand, the various suburban stations around Stuttgart, some of which have extensive marshalling yards, are in working order. The suburban traffic not working into Stuttgart Central has been resumed to a certain extent after the completion of temporary repairs.

There is no regular traffic whatever between Stuttgart and Tubingen, 44¼ miles to the south of Stuttgart Central and Tubingen Station itself, heavily damaged, shows no sign of life. Hechingen also, a junction station 15½ miles to the south of Tubingen, is completely isolated from the railway view point. On the western main line leading south and connecting Stuttgart with Horb, Rottweil, and Tuttlingen (for Constance), no trains operate between Stuttgart and Rottweil 68¾ miles to the south, but a limited number of trains now works south of Rottweil.

In the southernmost districts of the French occupation zone, adjoining Lake Constance, railway rehabilitation has made the best progress. There has been serious destruction on the Black Forest line leading through the Hollen Valley.

In both the American and French occupation zones, the repair of bridges and other railway structures is progressing well. The production of bridge components and other parts has been entrusted to German engineering firms, although these are handicapped by shortage of materials. This difficulty is particularly keen so far as locomotive repair work is concerned; progress is slow and long lines of damaged locomotives may be seen standing idle on almost every station of importance.

American diesel locomotives are at present being tested in the American occupation zone, but they seem to be suitable on main lines only, where curves are sufficiently wide and bridges strong enough for their weight. It is believed that it will take several months before the repair of railways in south-western Germany are sufficiently advanced to permit of anything approaching normal working conditions.

Reconstruction of the Belfort-Delle Line

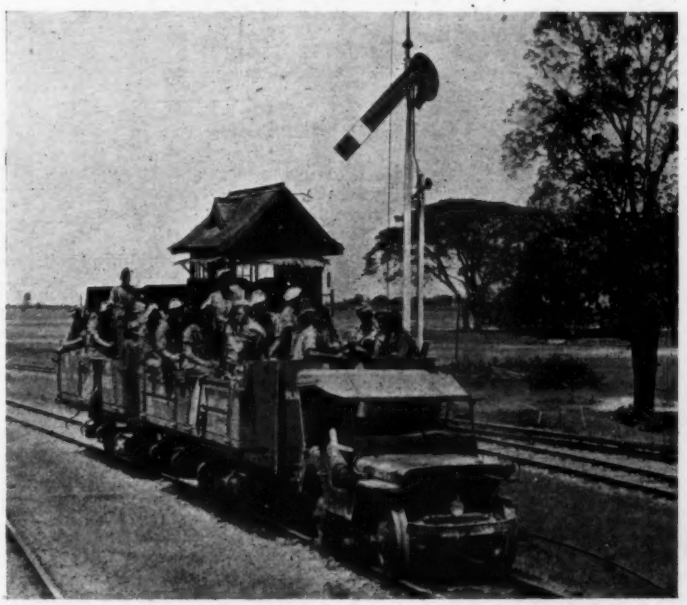
After considerable preparation, the work of reconstruction on the 20-mile line connecting Belfort with Delle on the Swiss frontier, was put in hand on May 11. The iron bridge that carried the line across the Rhône-Rhine Canal was found lying in the emptied canal, but, by the substitution of certain members, it proved possible to effect repairs. The reconditioning work was carried out in the Hericourt shops, and the new structure, weighing 52 *tonnes*, was assembled in Morvillars Station yard and conveyed to the canal side by a special wagon of the Swiss Federal Railways. The difficulties of reconstruction were increased by the refilling of the canal. When completed, the reconstructed bridge will be permanent.

On the other hand, the bridge which carried the line across the Bourbeuse river is being replaced by a temporary structure. The old pillars, on which rested the original 51-ft. spans, cannot be used again, neither can the abutments be used except for the present service bridge. Alongside the service structure piles are being driven for a new bridge which will have three spans, of 72 ft., 78 ft., and 72 ft., respectively. France is supplying the iron structure, while the building timber, bolts, and clamps are being supplied by Switzerland.

Heavy damage was wrought at Delle by Allied bombing. The overhead electric traction system, which begins at Delle for the electrified Delle-Delémont section, was destroyed and is now being rebuilt.

American War Transport

Something of the great extent of the American war transport effort is revealed in figures which have been published recently. From the entry of the United States into the war to the end of April, 1945, no fewer than 4,803,554 troops and 72,990,685 tons of cargo were dispatched across the Atlantic from ports on the East Coast and in the Gulf of Mexico. New York handled the lion's share of this traffic, and embarked in all 3,155,378 troops and 35,511,286 tons; from Boston 738,215 troops and 8,437,081 tons were loaded; and from Hampton Roads, Virginia, 721,175 troops and 11,245,044 tons of cargo. Philadelphia, Baltimore, Charleston in South Carolina, and New Orleans were other ports which took a major part in handling the traffic. Since the end of the European war, the movement has been in reverse. For twelve months from May onwards, New York expects to disembark an average of 3,000 men daily, and Boston and Hampton Roads about 1,500 each; these will be moved by rail to the distribution centres.



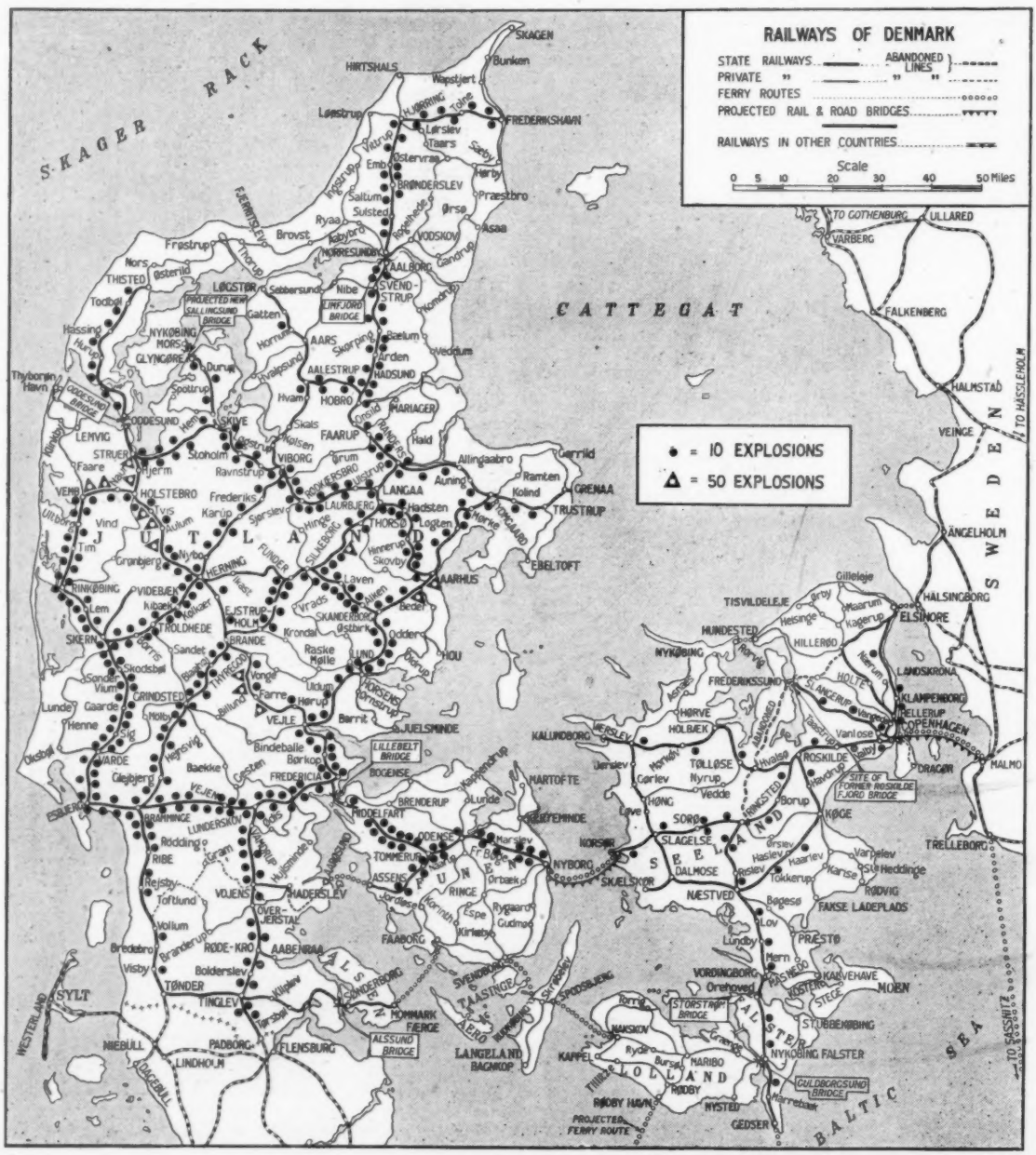
Railway wagons mounting 25-pounder guns with Rajput gunners, and escorted by West Yorkshire Infantry, being drawn by jeeps operated from Nyaunglebin Junction in Burma. The guns gave troops fighting in the area support within a few minutes of being called up from their base at the junction

Wartime Railway Sabotage in Denmark

A summary of the railway sabotage in Denmark has been published recently by Mr. Engqvist, Chief of Way and Works, Danish State Railways. Serious sabotage began in the autumn 1942 and continued with about 10 incidents a month until the autumn 1943. Then the damage increased to about 50 attacks a month. Every act of sabotage consisted on average of five explosions ; for instance, on one night 17 acts of sabotage took place, with 80 bombs bursting. In the spring and summer 1944 conditions were comparatively quiet, but in the autumn of 1944 attacks intensified again, and in the spring 1945 increased enormously, rising to 471 in April Towards the end it was necessary for the No. 2 district (Aarhus) of the State Railways to use coloured pins on a map to indicate clearly which lines were available for traffic at the moment.

The accompanying sketch map shows the number of acts of sabotage ; the greatest number of rails spoiled in one day was 355 on April 20, 1945. The Germans tried in many ways to stop these patriot activities, and placed sentries among the main routes at 100-metre intervals. As many explosions occurred just before a German military train was expected to pass, they placed captured Danes in the first carriage of the train. When the patriots learned so to arrange the explosions that they took place under the third or fourth car, the Germans placed the Danes in the third or fourth car. Many trains succeeded in passing the blown-up places without derailing, even if several yards of rail were missing, but several German trains were derailed and of course blocked the track for hours or days.

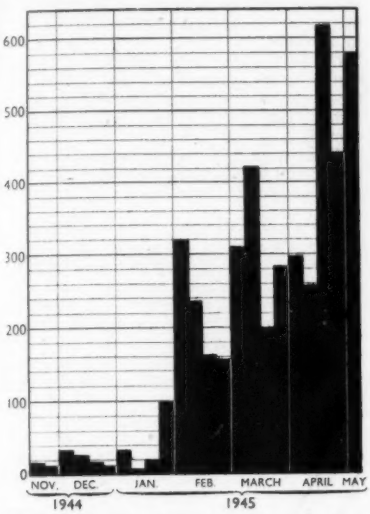
A graph shows the growth of the sabotage in the latter part of the war. In early days the attacks mostly took the form of rail bombing with plastic explosive placed on the rails, and the damage was not too effective. Soon the patriots gained experience, and the bombings grew very effective. Of course, there were railwaymen among the saboteurs. Gradually the attacks were directed against points, and 24 bridges have been destroyed, so that through traffic encountered great difficulties. Because of lack of repair material, it was necessary in



The widespread sabotage by patriots on the Danish State Railways between November 15, 1944, and May 5, 1945

many cases on double-track lines to take rails from one track to repair the other, and the said route had to be worked temporarily as single-track. At many stations trains could no longer pass one another, as the rails of the turnout were used for repair work.

Signal posts suffered heavily. At 23 stations, some of them important, the signalling installations were out of use, so that



The weekly totals of patriot bombs placed on the Danish State Railways from November 15, 1944, to May 5, 1945

the trains had to be worked in and out very slowly. Engine sheds and turntables were bombed, and a particularly hampering action was the bombing of 16 water towers. Three private factories, making points and crossings for the railways, were also bombed, and although it would have been possible to resume work at two of them, this was not done. The State Railways rail welding plant, instead of being sabotaged, was closed by secret agreement with the patriots. A train ferry bridge was bombed, and the State Railways ferry *Danmark* was bombed in Gedser ferry harbour, so that it is now lying on the bottom. It is estimated that it will cost about 7·5 million kroner to repair all that has been damaged.

SWISS RAILWAY WORKING POOL.—A working pool is being formed between the various railways serving the valleys and mountains in the Jungfrau region (to the south of Interlaken). These lines constitute a metre-gauge electrically-worked system with a route length of some 45 miles. A joint management has been set up, under the leadership of the Jungfrau Railway. The pool is to comprise the following lines :—

Jungfrau Railway (Scheidegg—Jungfraujoch)
Wengernalp Railway (Lauterbrunnen—Scheidegg—Grindelwald)
Bernese Oberland Railways (Grindelwald—Zweilütschinen)
Worked by Bernese Oberland Railways :—
Interlaken Ost—Schynige Platte
Interlaken Ost—Zweilütschinen
Zweilütschinen—Lauterbrunnen
Lauterbrunnen—Grütschalp—Mürren
Mürren—Allmendhubel
Interlaken—Harder

To the group so formed will be added in due course the Grindelwald-Grindelwald-First Company, a concern already established, which is to build a ropeway in the Grindelwald region.

Pan-American Railway Congress

The agenda for the Fifth Pan-American Railway Congress, to be held in Montevideo next November, has been published, and is being distributed among railways, ministries, embassies, legations, universities, schools, and engineers throughout the continent. Various questions which were ventilated at the fourth congress, at Bogotá, but on which work could not be finished, are included for discussion. Added interest is attached to the congress at Montevideo on account of its projected co-ordination with the conclusion of the Second Pan-American Engineering Congress, to be held in Buenos Aires.

The agenda for the railway congress is as follows :—

Section A: Permanent Way

Theme 1: Intermittent luminous signals or varied light signals instead of fixed signals and uniform light.

Theme 2: International regulation of the calculations pertaining to bridge construction.

Theme 3: Modernisation of alignments to allow for higher speeds and greater loads to an axle. Use of soldered rails and special steels in their manufacture. Experiments.

Theme 4: Possible economies and rationalisation of permanent-way maintenance.

Section B: Traction & Rolling Stock

Theme 5: Standardisation of rolling stock. Automatic brakes.

Theme 6: Fuel: coal, petrol, firewood. Apparatus for their better use, particularly ashpans and spark protectors.

Theme 7: General characteristics of vehicles; improved comfort of passengers; hygiene; disinfection; illumination; air-conditioning; safeguards against ill effects of great heights.

Theme 8: Adequate mechanical appliances to facilitate the interchange of merchandise and rolling stock between railways of different gauges.

Theme 9: Technical, economic and comparative examination of the different systems and new methods of traction.

Theme 10: Methods to modernise and increase the efficiency of locomotives in service.

Theme 11: Electrical signalling with luminous signs in signal cabins.

Theme 12: Improvements in couplings and automatic brakes.

Theme 13: Workshops for construction and repairs: their situation, equipment and operation.

Section C: Exploitation

Theme 14: Use of telephone, telegraph, and radio in the dispatching of trains and control of movement.

Theme 15: Influence of signalling and communications in the economic exploitation of railways.

Theme 16: System under which private-owner wagons should circulate on railways.

Theme 17: Prevention of accidents on railways.

Theme 18: New methods of exploitation; use of light and fast rail motor cars for passenger services.

Theme 19: Better use of wagons, especially those for the transport of cattle, fruit, vegetables, and liquids in tanks.

Theme 20: Influence of the welfare of employees in the profitable exploitation of railways. Houses for the staff.

Section D: Accounts & Statistics

Theme 21: Systems of accounting in use on railways and auxiliary services.

Theme 22: Measures for unifying such accounts and statistics, also American railway terminology.

Section E: Legislation & Administration

Theme 23: Facilities which could be offered for postal letters.

Theme 24: Better legislation for State-owned railways and for private railways in their relations with the State.

Theme 25: Possibility of placing on an international scale the jubilee benefits of railway staff.

Section F: General Matters

Theme 26: Present situation of railways in every country of the American continent, and prospects based on the economic development of each one. Favourable and unfavourable factors which may apply in the post-war period.

Theme 27: Necessity for the combination of railway services with commerce by the application of direct and special tariffs.

Theme 28: Modernisation of railway legislation in the sense of giving more elasticity to tariffs.

Theme 29: Regulation of railway staff: (*a*) selection; classification; conditions of promotion; (*b*) technical preparation and lessons in first aid.

Theme 30: Special tourist trains with a view to promoting: (*a*) commercial relations; (*b*) intellectual intercourse; (*c*) friendly relations.

THEMES IN COMMON WITH THE SECOND PAN-AMERICAN ENGINEERING CONGRESS

Section A: Permanent Way

Theme 1: Crossings of railways by roadways and other means of communication. Technical, legal and economic aspects.

Section D: Accounts & Statistics

Theme 2: Analysis and classification of costs of the various systems of transport, also methods of calculation.

Section E: Legislation & Administration

Theme 3: Conventions for international traffic.

Section F: General Matters

Theme 4: Inter-American railway communications. New aspects of this problem in face of the development of other means of transport.

Theme 5: Co-ordination and regulation of different means of transport.

Theme 6: Study of the most convenient tariff systems in the general interest in face of competitive means of transport.

BAKELITE LIMITED.—At the recent annual general meeting of Bakelite Limited, with Sir James Swinburne in the Chair, Mr. H. V. Potter, Managing Director, said that in common with industry generally the company's activities had been gradually diverted from a peace to war footing late in 1938 and early 1939. The company manufactured raw materials, such as moulding materials, synthetic resins, sheets, rods, and tubes, and not finished products, and it had to face many problems in adapting the characteristics of these materials to meet the demands of the various services. The company intended to enter new fields of plastics. The manufacture of vinyl plastics to replace rubber for electrical cable covering and tubing—a wartime activity—would be continued and expanded. Vinyl plastics would be continued and expanded. O plastics would be used for such diverse uses as upholstery, waterproof curtains and aprons, shoes, belts, etc

Swiss Transport Union

The Union of Swiss Transport Undertakings, originally formed at Zurich in 1889, under the title of The Union of Swiss Secondary Railways, embraces almost all the Swiss privately-owned railways, tram and bus undertakings, and a number of shipping companies operating on the Swiss lakes. As far as railways are concerned, the Union comprises 136 member-companies comprised as follows :—

	Route Miles
29 standard-gauge railways	482¼
57 narrow-gauge railways	943½
12 rack railways	68½
11 funiculars	37
27 tram companies	263¼
	1,795
13 motorbus undertakings	283
10 trolleybus undertakings	40
	323

The above figures are in addition to those relative to traffic undertakings operating bus services. It will be noted that the route mileage of the member railways is only 44 miles less than that of the Swiss Federal Railways (1,839 miles), an indication of the importance of these privately-owned lines, which represent a combined investment of more than Fr. 1,000,000,000.

The Union is managed by a central committee of five members, with a new chairman every two years. One of the advantages afforded to members is the privilege of joint purchase, at advantageous prices, of materials and supplies. Under the management of the Union there are eight sub-committees for the study of matters relating to (1) the press, (2) technical developments, (3) fares and rates, (4) postal transport, (5) tramway working, (6) motor vehicles, (7) trolleybus operation, (8) salaries and wages. Matters of joint interest to all the member undertakings are discussed twice yearly at conferences held in the spring and autumn.

Transport and the Greater London Plan

The proposals contained in Sir Patrick Abercrombie's " Plan for Greater London " which includes a vast regrouping of population and industry, a new road system, and the building of a ring of airports round London has repercussions on transport and communications. The plan contains criticisms of present methods and proposals for future transport systems.

Comments in the plan on railway travel include :—

(*a*) The daily passenger demands at peak hours exceed the capacity of certain routes.

(*b*) Some suburban stations are sited with too little space for discharge of passengers to the road, resulting in congestion.

(*c*) Railway services have not always increased in line with suburban growth, and they are in some cases slower and less frequent than they should be.

It is anticipated in the plan that a well-planned decentralisation of population and industry, by reducing the amount of daily travel to and from work largely would solve railway problems.

Some modifications are suggested—electrification of the main steam-lines to certain points and of branch lines—the use of electricity or other smokeless fuel for goods traffic as well as for passenger traffic—a reduction in the number of goods stations and the reduction of time and labour by using modern methods of mechanical handling for loading and unloading—the improvement of the road approaches to many of the stations.

Roadways.—The main features of the proposals in the plan for the future road system of London are :—

(1) The express arterial highways, linking up on the inner side with the ten main radials of the County of London Plan and extending outside Greater London in a system of national routes.

(2) A sub-arterial road system, to carry all the normal main traffic of the region and including many existing roads of great importance.

(3) Five ring roads lettered A to E of which A, B, and part of C are in the L.C.C. area, connecting with arterial roads and also serving as by-passes round congested centres.

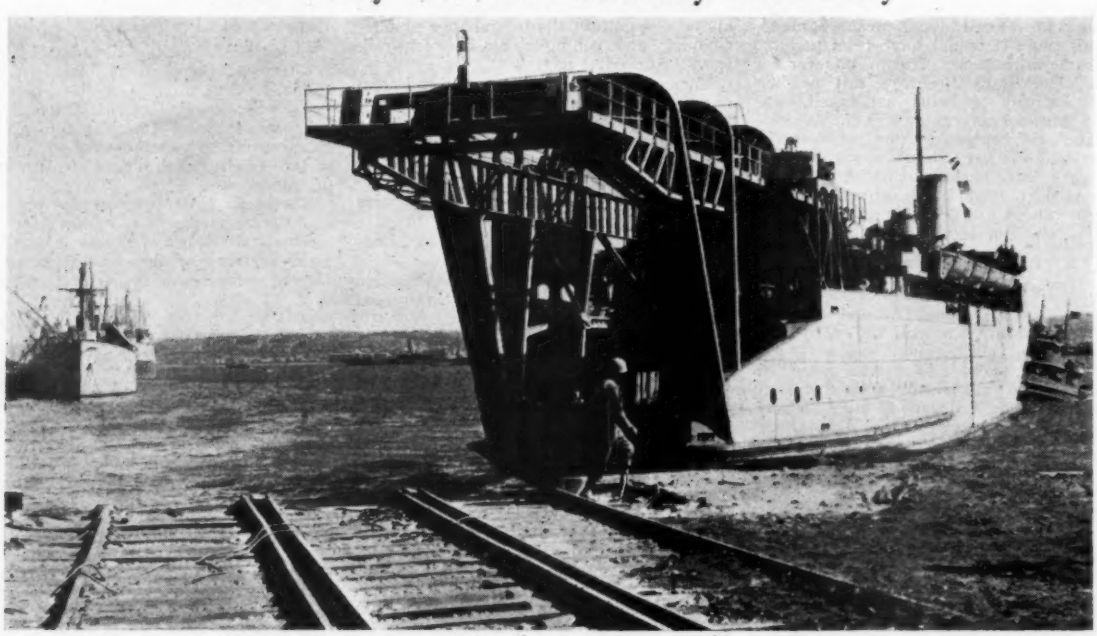
Road junctions with roundabouts and under and over passes (making three levels) are suggested for free flow of traffic in both directions.

Air Traffic.—Dealing with the future of air transport, it is considered that London requires a ring of airports, one of which will be of the trans-ocean type.

Waterways.—The oldest but now least used of the industrial transport family—the navigable waterways—are also considered. It is assumed that London will remain one of the world's greatest ports. Improvements suggested include the planning of canal frontages, the reconstruction of two locks, and the establishment of collecting and distributing centres at salient points. It is thought that as water transport is the cheapest form of convey ance the maintenance of the canal system between the Midlands and the Thames may play an important part in post-war national economy.

The total area covered by the plan for Greater London is 2,599 sq. miles, which

Stern Gantry on Southern Railway Train Ferry



In our article on train ferries and the continental invasion (July 20 issue, page 76) mention was made of the special stern gantry cranes to handle locomotives and other heavy lifts up to 84 tons which were designed for the Southern Railway "Twickenham Ferry" class train ferry steamers. The work was put in hand late in 1942, and the fabrication of the structural steelwork and crane machinery proceeded during 1943. As the vessels had to remain in service on urgent operational work, they could not be fitted with their new gear as it became ready, but were equipped at the last possible moment. Cherbourg was captured on June 26, 1944, and on July 29 the "Twickenham Ferry" delivered her first cargo of locomotives

had a 1938 population of 6¼ millions. The area extends to about 30 miles from the centre of London. The plan divides this area into four rings :—

The Inner Urban Ring, embracing the built-up districts surrounding the L.C.C. area, in which some lessening of the population is recommended. The Suburban Ring, extending about 12 miles beyond the Inner Ring. The Green Belt Ring, extending a further 5 miles outwards and including many existing centres of population. Finally, the Outer Country Ring, containing district communities set in mainly agricultural country.

The Greater London Plan has now been published with coloured maps, diagrams and photographs, and a simplified interpretation of the plan is on exhibition at the Institution of Civil Engineers, Westminster, until September 15.

British Timken Limited

At the annual general meeting of British Timken Limited, Mr. Michael Dewar, the Chairman, said:—

The most satisfactory bearing produced for variable-pitch airscrews has been that designed and produced by your company—and copied by the enemy! Every British-built tank runs on Timken bearings, with the exception of one on plain bearings; gun carriages, universal carriers, armoured cars, amphibious vehicles, engines, bomb-door operating gears, all kinds of work for high-speed motor gunboats, naval landing craft, and so on, are included in the list. For factory equipment we have made very large machine tool bearings up to 6 ft. in diameter, and practically all modern machine tool manufacturers are now conversant with the advantages of your company's bearings.

Two special applications of Timken bearings are of interest: one is a 20-in. bearing for radio-location sets, and the other is for the enormous drums on which were wound the cross-Channel petrol pipes. You will notice from this that it is quite impossible to manufacture any war machine without the use of anti-friction bearings. I therefore suggest that probably the simplest way to control the armament industry in Germany would be to prohibit the manufacture in that country of anti-friction bearings, and to insist on their importation. Before the war Germany employed some 20,000 people in this industry, and at the peak of their production during the war reached 55,000. This method of control, therefore, would not mean the unemployment of large numbers of people in Germany itself, and consequent difficulty in finding other reconstruction work for them.

Everyone is aware of the vital need of this country for exports. It is therefore regrettable that, owing to our inability to obtain the necessary labour, bearings are having to be imported into this country from America and Sweden.

While we are all, whatever our position in life, anxious to be relieved from the regimentation which totalitarian warfare has forced upon us, nevertheless we must realise that, with the exception of Russia, this country has been more severely stressed and strained than any other. To use an engineering expression, the stresses have gone beyond the elastic limit. It is bound to take time, good will, and hard work before these stresses can be removed. But I think we are entitled to hope that the red tape which we all associate with controls may be removed from entangling our feet and arms, and be used, like the tapes on a modern athletic ground, for guiding the runners in sprint races, and so help to create better records for human speed and skill.

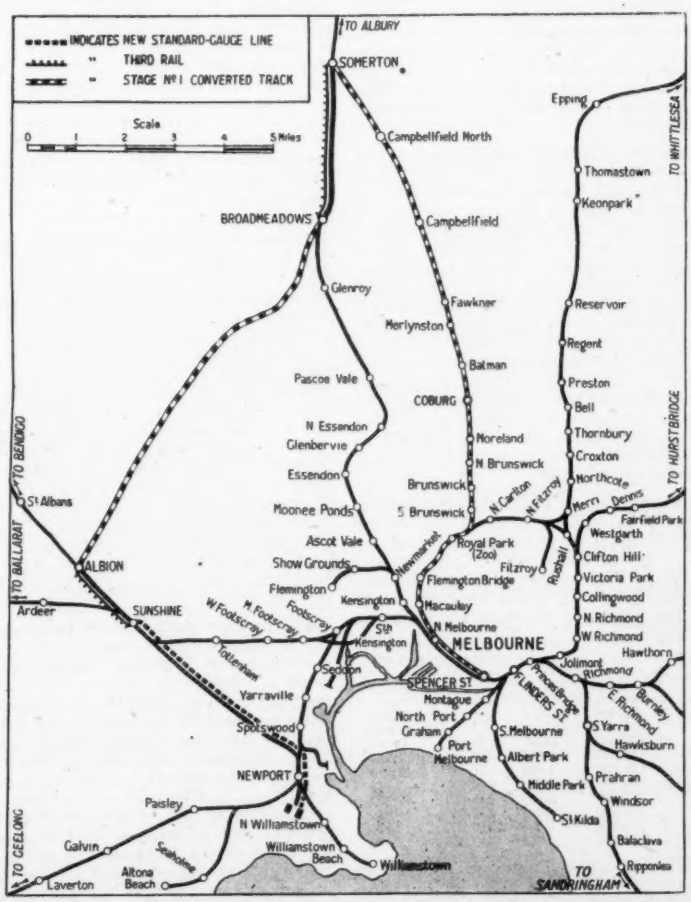
The report and accounts were adopted.

EDGAR ALLEN & Co. Ltd.—Presiding at the 46th ordinary general meeting of Edgar Allen & Co. Ltd., Mr. W. H. Higginbotham, the Chairman, said that up to December 31, 1944, the company produced, in addition to many other types of steel, some 2,900 tons of high-speed steel for the manufacture of tools of all kinds, 3,400 tons of other tool steels, and thousands of tons of stainless steels for aircraft parts, submarines, warships, etc. Between September, 1939, and the end of 1944, the number of flash butt-welds made amounted to some 10,000,000. The trackwork department produced 1,080 railway turnouts, and machined, drilled, tapped, etc., 7,312 tank plates and ground 837,600 aeroplane parts. The machinery department produced a complete plant for the burning of magnesite for the production of magnesium metal. The company was actively renewing its foreign contacts, and business with certain of the liberated European countries had already recommenced. Substantial contracts had been taken for supply of cement-making plant to Iraq and to India; and further developments were expected in this department. There were many indications that a period of considerable activity lay ahead, and the board saw no special reason for pessimism, provided that industry was allowed to operate freely, unhampered by unnecessary restrictions and controls.

Gauge Changeover Plans in Victoria

We described in some detail, in our issue of April 13 last (page 366) the arrangements that have been made for the conversion of the Victorian Government Railways from the present broad gauge of 5 ft. 3 in. to the standard 4 ft. 8½ in. Particular reference was made to the temporary expedients that would be necessary to enable new and converted rolling stock to be routed out from the Newport shops to the first section of converted line in the North-East service, without interfering with services still using the broad gauge. The accompanying map indicates the alterations involved more clearly than is possible in words. It will be seen that from Newport to Sunshine a new standard-gauge track will be constructed running alongside the 5-ft. 3-in. line.

From Sunshine to Albion, and from Broadmeadows to Somerton, a third rail will be provided, whilst the section between Albion and Broadmeadows will be converted to 4 ft. 8½ in. simultaneously with the conversion from Spencer Street of the line running *via* Fawkner to Somerton—the first stage of the conversion of the line to Albury.



Intermediate stage in the gauge-conversion plans of the Victorian Government Railways, to give both broad-gauge and standard-gauge access to the Newport shops

Notes and News

Railwaymen's Day in Russia.—Railway workers throughout the Soviet Union, nearly half of whom are women, were honoured by radio and press tributes and at public meetings on "Railwaymen's Day," August 5.

Southern Railway Horticultural Show.—The Southern Railway is to hold a Victory Show of fruit, flowers, and vegetables, at its sports ground at Raynes Park on Wednesday, September 12. Lady Missenden will perform the opening ceremony.

British Agency Wanted by a Belgian Firm.—An old-established Belgian firm in Brussels would like to hold exclusive agency in Belgium and Luxembourg for a British firm producing railway and tramway rolling stock and fittings. See Official Notices on page 207.

Another Indian Railway Purchase.—The Government of India has announced that it proposes to purchase the Sialkot-Narowal Railway as from April 1, 1946. This undertaking consists of 39 miles of 5 ft. 6 in. gauge track, and already is worked by the North Western Railway administration.

Transport Organisation.—The Office Management Association is holding a meeting on September 27, at St. Ermin's Hotel, Westminster, S.W.1, at 2 p.m., at which Mr. W. H. Vine, of the London, Midland & Scottish Railway, will give an address to members and guests on "Transport and its Organisation." Mr. Vine will outline the working of the London, Midland & Scottish Railway clerical organisation in relation to goods traffic, its systems and methods. Executives of transport organisations are invited to apply for admission to the Office Management Association, 2, Caxton Street, Westminster, S.W.1.

Tenerife Electric Railway.—It is estimated that more than 10,000 passengers are carried daily by the one electric railway in Tenerife, Canary Islands. This line extends from Santa Cruz to Tacoronte, a distance of about 13 miles, and passes through La Laguna. Power is obtained from the only electric light and power company on the island. The gauge is 1 m. and rails are of Belgian type. The 15 passenger cars and 2 goods wagons are fitted with motors; in addition there are passenger and goods trailers. There is a plan to extend the service from Tacoronte to Orotava, probably by trolleybuses rather than railcars, using the same current as now employed. The line is the property of the island government.

Iron and Steel Production Statistics.—After a lapse of six years a resumption has been made of the publication of the monthly production figures of pig iron and steel ingots and castings. In the following table the figures are given for each month from the beginning of the current year to July last:—

	Pig iron		Steel ingots and castings	
	Weekly average	Annual rate (000's omitted)	Weekly average	Annual rate (000's omitted)
	Tons	Tons	Tons	Tons
January ...	127,000	6,611	216,300	11,245
February...	138,700	7,109	241,400	12,553
March ...	141,400	7,354	246,100	12,799
April ...	137,600	7,154	236,600	12,302
May ...	128,200	6,668	210,800	10,962
June ...	132,800	6,906	238,200	12,386
July ...	134,800	7,010	213,800	11,118

Steel production figures for July were affected by holidays in many of the steel-making districts. The output in May was down on account of the VE and Whitsuntide holidays.

British Wagon Co. Ltd.—Interim distributions in respect of 1945 of 3s. a share on the £20 shares, £3 paid, and of 1s. a share on the £20 shares, £1 paid, have been made by British Wagon Co. Ltd The distributions a year ago were the same

Tilling Motor Services Limited.—The accounts of Tilling Motor Services Limited (controlled by Thomas Tilling Limited) show a profit for the year ended June 30, 1945, of £355,959, against £355,386 for the previous year. The income from investments was £402,392, and other income £3,774, totalling £406,166 (£404,649). The final dividend is 4 per cent., tax free, again making 7½ per cent., tax free, for the year, and £25,000 is again transferred to general reserve.

Scinde Punjaub & Delhi Railway Annuities.—The 786 miles of the Scinde Punjaub & Delhi Railway Company were purchased by the Government of India under the powers of an Act of 1886, which provided for the purchase by means of annuities, namely, Class "A" representing capital and interest, and Class "B." It is now notified that on June 30, 1945, a total sum of £4,011,531 was invested for the purpose of providing a sinking fund in respect of the Class "B" annuities.

Southern San Paulo Railway.—A proposal to liquidate the Southern San Paulo Railway Company will be placed before shareholders on September 3 next. It will be remembered that the railway property was sold in 1927. Assets of the company in Brazil comprising cash and State of San Paulo internal bonds were sequestrated in July, 1940, by the Brazilian Government. A settlement with that government enabled a cash distribution to be made in the autumn of 1944 to holders of the 5 per cent. debenture stock of the company of about 80 per cent. of their holdings, and a second and final payment of £3 6s. 6d. per cent. is being made. As there are no surplus assets available for shareholders it is considered that there is no object in maintaining the company's existence.

Guest, Keen & Nettlefolds Limited.—The full accounts of Guest, Keen & Nettlefolds Limited for the year to March 31, 1945, show that net trading profits (including dividends and interest received and after providing for directors' fees and taxation) were £1,428,834 (£1,357,708). Allocations to debenture interest and redemption and of £320,000 (£300,000) to depreciation leave the net profit at £1,017,168 (£965,028), to which has to be added £629,554 brought in. War damage insurance receives £7,000, £50,000 is again placed to contingencies account, and £150,000 to general reserve. Tax-free dividends on the first and second cumulative preference shares require £327,880, and the ordinary dividend for the year is raised from 10 per cent. t o 11 per cent. (less tax), leaving £757,947 to be carried forward.

Institution of Electrical Engineers.—In September, 1943, the council of the Institution of Electrical Engineers instituted a scheme for making the technical meetings of the Institution accessible to those who may be interested in the proceedings but who may consider that their technical experience and educational attainments do not suffice to admit them to any form of Institution membership. The council recently reviewed the working of the scheme, and is satisfied that it has performed a useful function. It has decided that it should be continued for the coming session, and accordingly has ordered that a person in the category outlined above who is interested in the proceedings at ordinary meetings, section meetings, local centre meetings and informal meetings shall be provided by the Secretary with an application form, on the completion of which, and on payment of a fee of 10s. to cover administrative costs, he may receive notices fo meetings and an invitation card which will serve as a title of admission to the technical meetings of the Institution to be held during the forthcoming session in London and the provinces. The possession of the invitation card will not confer on the holder any status within the framework of

British and Irish Railway Stocks and Shares

Stocks	Highest 1944	Lowest 1944	Prices August 21, 1945	Prices Rise/Fall
G.W.R.				
Cons. Ord.	62¼	55	54	+ 1
5% Con. Pref. ...	122½	114¼	112	–
5% Red. Pref. (1950)	110½	104	103	–
5% Rt. Charge ...	135½	128	123	–
5% Cons. Guar. ...	134⅞	125	120½	–
4% Deb.	118¼	112¾	108	+ 1
4½% Deb.	118½	114	109½	–
4½% Deb.	124½	119½	113	–
5% Deb.	137	129½	126	–
2½% Deb.	77	73½	76½	–
L.M.S.R.				
Ord.	34¾	27⅞	27	+ ¼
4% Pref. (1923) ...	64½	55	56½	+ 2
4% Pref.	81	72½	74	+ 2
5% Red. Pref. (1955)	105¾	102	101½	–
4% Guar.	107½	99½	99	–
4% Deb.	111½	104	106	–
5% Red. Deb. (1952)	111	108	107½	–
L.N.E.R.				
5% Pref. Ord. ...	10½	7 7/16	6½	–
Def. Ord.	5 7/16	3¾	3¾	+ ¼
4% First Pref. ...	68¾	55½	55½	+ 2
4% Second Pref. ...	35¾	28½	28	+ ¼
5% Red. Pref. (1955)	101	97½	98	–
4% First Guar. ...	101½	96¾	96½	–
4% Second Guar. ...	95½	88½	91½	–
3% Deb.	88½	80¾	84	+ ½
4% Deb.	110½	103½	105	–
5% Red. Deb. (1947)	105¾	101½	101½	–
4½% Sinking Fund Red. Deb.	107	104½	104½	–
SOUTHERN				
Pref. Ord.	80½	71¾	71½	+ ½
Def. Ord.	26¾	23	23	+ ½
5% Pref.	122	113½	111	–
5% Red. Pref. (1964)	117½	112½	112½	–
5% Guar. Pref. ...	134	125½	120½	–
5% Red. Guar. Pref. (1957)	115¾	112½	110	–
4% Deb.	118	110	107½	–
5% Deb.	135½	127	126	–
4% Red. Deb. (1962-67)	111½	107½	108½	–
4% Red. Deb. (1970-80)	112	108¾	108½	–
FORTH BRIDGE				
4% Deb.	107	103	104	–
4% Guar.	106½	102	103	–
L.P.T.B.				
4½% "A"	125	119	118½	–
5% "A"	133½	128	128½	–
3% Guar. (1967-72)...	99½	98	99	–
5% "B"	124½	118 7/16	116½	–
"C"	72½	64½	63	+ 2
MERSEY				
Ord.	35¾	33	33	–
3% Perp. Pref. ...	72	66	69	–
4% Perp. Deb. ...	105	103	104	–
3% Perp. Deb. ...	85½	79½	80	– 2
IRELAND*				
BELFAST & C.D.				
Ord.	9	6	6½	–
G. NORTHERN				
Ord.	33⅞	19	28⅞	+ ½
Pref.	49	37	47½	+ 1
Guar....	70	57 7/16	70½	–
Deb.	90½	81½	92½	–
IRISH TRANSPORT				
Common	—	—	76½	–
3% Deb.	—	—	100	–

*Latest available quotation

OFFICIAL NOTICES

None of the vacancies on this page relates to a man between the ages of 18 and 50 inclusive unless he is excepted from the provisions of the Control of Engagement Order, 1945, or the vacancy is for employment excepted from the provisions of that Order.

OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

DRAUGHTSMAN required for Carriage and Wagon Department of Consulting Engineers' London Office. Age 30/35. Replies, which will be treated in confidence, should give full particulars of training and experience, and state age and salary required to Box "T.R.R.," c/o 95, Bishopsgate, E.C.2.

OLD-ESTABLISHED and well-connected Belgian firm in Brussels wishes to hold the exclusive agency in Belgium and Luxembourg for a British firm producing railway and tramway rolling stock and fittings. All particulars and references on application.—Box 248, c/o *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

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the Institution, nor will he have the right to join in the discussions without special permission from the chair. Those interested whether they reside in London or the provinces, should apply to the Secretary of the Institution.

Carriage & Wagon Draughtsman Required.—A draughtsman is required for the Carriage & Wagon Department of a consulting engineer's London office. See Official Notices above.

Increased Train Services in Eire.—On Wednesday, August 15, train services in Eire were resumed on Wednesdays. Thus, there is now a service on all main lines for six days a week.

Midi and Orleans Railways Sterling Bonds.—The coupons due November 15, 1940, to May 15, 1945, inclusive (representing the arrears of interest on the Midi Railway Company 4 per cent. sterling bonds 1975 and the Orleans Railway Company 4 per cent. sterling bonds 1975) will be paid at the Counting Houses of Morgan Grenfell & Co. Ltd., N. M. Rothschild & Sons, or Lazard Bros. & Co. Ltd., on and after September 1, 1945.

Port of Bristol Authority.—The statement of accounts and statistics of the Port of Bristol Authority for the year ended March 31, 1945, shows that the total revenue amounted to £2,484,536, of which £1,080,777 came from dues, £948,051 from the traffic department, £46,977 from the railway companies for interchanged traffic, £188,658 from the warehouse department, and £220,073 from miscellaneous sources. Expenditure amounted to £1,519,276, and £965,260 was carried to net revenue account. The final result of the year's trading was a net balance of £1,761, after providing for loan interest and management expenses, loan redemption, income tax, capital works charged direct to revenue, renewals, contingencies, and deferred maintenance and dredging. There has been no call on the general rate since the year 1939-40.

Wellman Smith Owen Engineering Corporation Limited.—In the course of his address at the 26th ordinary general meeting of Wellman Smith Owen Engineering Corporation Limited, the Chairman (Sir Samual Roberts, Bt.) said that the change over from war-time work to normal production did not present any serious problem in the case of this company and had been very largely effected. The value of contracts on the books at March 31, 1945, stood at over £1,000,000 and with the work in prospect arising out of the re-equipment of the steel industry, indicated that the company's facilities would continue to be fully employed and further contracts received since that date had confirmed this. A research station had recently been added which he believed would prove of great value in the development and improvement of the company's specialities. An extension to the existing shops was in hand which was expected to be available for use later in 1945. When completed it would increase the capacity of the assembly and erecting department by approximately 50 per cent.

Mather & Platt Limited.—An interim ordinary dividend of 4 per cent. is announced, the same as a year ago.

Greenwood & Batley Limited.—Trading profit of Greenwood & Batley Limited for the year ended March 31, 1945, after making provision for E.P.T. and crediting interest and income from investments and property, amounted to £145,583, compared with £155,105. The final dividend of 10 per cent., and the dividend for the year of 15 per cent. on the ordinary shares are unchanged.

North Central Wagon Co. Ltd.—For the year to June 30, 1945, the profit of the North Central Wagon Co. Ltd. amounted, subject to taxation, to £70,492 (£61,638). Taxation absorbed £36,895 (£39,437), and £10,000 (nil) has been allocated to reserve. After providing for preference dividend and £200 additional remuneration to members of the finance committee, there is a balance enabling 4·8d. a share (3·6d. a share), less tax, to be distributed on the paid-up ordinary share capital. The amount carried forward is £25,520, compared with £25,248 brought in.

J. Stone & Co. Ltd.—In the course of his address at the forty-first ordinary general meeting of J. Stone & Co. Ltd., the Chairman, Mr. Kenneth Preston, said that the company's war work had developed naturally from the peace-time activities of its various departments. Automatic voltage and current regulators—one of the company's specialities for railway and industrial applications—had been introduced by it to the Air Ministry in 1937, and throughout the war these instruments had been supplied for aircraft, tanks, naval vessels, and new developments, such as beam location. The company established and equipped two new light alloy foundries during the war, one of which, the Charlton Magnesium Foundry, was the most fully mechanised in the country for this class of work. It was now resuming gradually its normal peace-time activities, and taking its part in the rehabilitation of the world's railways and industries.

South African Railwaymen's Training Institute.—The first students of the South African Railways & Harbours Central Training Institute will start their studies shortly at the former No. 7 Air School, Kroonstad. This will be the training centre until the buildings at Esselen Park (formerly Kaalfontein) have been completed. The Esselen Park centre was referred to briefly in *The Railway Gazette*, April 27 issue. Mr. H. P. J. Lyell, the Principal, formerly head of the commercial branch of the Port Elizabeth Technical College, is supervising the rebuilding of part of the air school. Part of the school is being taken over now by the institute, but within a year all the buildings will be handed over by the military and by then the college will have about 600 students, and the teaching, catering, and maintenance staff will number about 200. Groups of students will arrive as the work of converting the air school progresses. At present about £20,000 is being spent by the Administration and, as Mr. F. C. Sturrock, Minister of Transport, announced in Parliament, about £80,000 will be spent eventually on the Kroonstad college.

Receipts of Swiss Stations in 1944.—Below is given a list of the working receipts recorded by the ten principal stations of the Swiss Federal Railways in 1944. As far as Zürich is concerned, the ten Federal Railways' stations in the Zürich area (Central Station, Oerlikon, Seebach, Wipkingen, Altstetten, Wiedikon, Wollishofen, Letten, Stadelhofen and Tiefenbrunnen), totalled combined working receipts amounting to Fr. 50,000,000 (£2,882,000) in 1944, of which the passenger traffic accounted for Fr. 30,000,000 (£1,730,000). Goods receipts of the Central Station alone decreased in 1944, compared with 1943, when they totalled Fr. 17,300,000.

Passenger receipts	Fr. million
Zürich (Central Station)	25·7
Berne (Central Station)	12·7
Basle (Central Station)	11·2
Lausanne	9·4
Geneva-Cornavin	9·3
Lucerne	6·8
Winterthur (main Station)	4·4
Bienne	3·9
St. Gall (main Station)	3·8
Lugano	2·8

Goods receipts	Fr. million
Basle (Central Station)	19·1
Zürich (Central Station)	15·9
Geneva-Cornavin	13·7
Berne (Central Station)	7·2
Lucerne	5·2
Lausanne	4·2
Buchs	3·9
Schaffhouse (Central Station)	3·8
Viège	3·8
Basle (St. Jean Station)	3·6

Forthcoming Meeting

September 1 (*Sat.*).—The Permanent Way Institution, Lecture Hall, Town Hall Library, Blackpool, 3 p.m. "Permanent Way Works for Coronation Scot's Record Run", by Mr. F. Hudson of Crewe.

Contracts and Tenders

David Brown & Sons (Huddersfield) Ltd. have opened an area office at 109, Pilgrim Street, Newcastle-upon-Tyne. The telephone number is Newcastle-upon-Tyne 20902, and the telegraphic address is "Gearing, Newcastle-upon-Tyne."

Railway Stock Market

Stock markets have been quietly steady with British Funds recording further gains on the belief that the Government favours a still cheaper money policy. Generally, however, business has been on a moderate scale, a waiting attitude predominating in the hope that the debate on the King's Speech may provide clearer indications of Government plans in regard to industry and the methods by which it is proposed to carry them into effect. Home rails were the brightest feature of markets, the rally making further progress. Absence of any specific reference to nationalisation of transport in the King's Speech was taken as confirming the view that a lengthy period may elapse before the Government can turn attention to nationalisation of the railways.

Consequently, it is being assumed that the existing rental agreement and dividends at around current rates may continue for two years or more, and that if this is so, the large yields on home rails have added attractions. Colliery shares were not much affected by the Government statement on nationalisation of the industry, the prevailing view being that share prices probably fully discount this prospect, although much has yet to be disclosed as to the question of fair compensation for shareholders.

The view appears to be growing that, all factors considered, there seems no logical reason why home rail junior stocks should be valued on a basis showing yields well above the average on colliery shares, and that over a period, home rails may have scope for satisfactory appreciation.

The rally this week has embraced various preference and prior charge stocks as well as junior stocks. Compared with a week ago, Great Western has rallied further from 53¼ to 54¼, the 5 per cent. preference held last week's small improvement to 112, and the guaranteed stock was a point up at 121½, while the 4 per cent. debentures strengthened from 107⅛ to 108. L.M.S.R. recovered further from 26⅜ to 27, the senior preference from 73¼ to 73½, and the 1923 preference from 55¼ to 56⅜. Among L.N.E.R. stocks, the second preference moved up from 27⅜ to 28⅜, the first preference from 54¾ to 55¾, and the first guaranteed from 96 to 96½. Southern deferred was 22⅞, compared with 22⅝ a week ago, and the preferred improved from 71 to 71½. Southern 4 per cent. debentures were maintained at 107½, and the 5 per cent. guaranteed stock was lower at 121 with the 5 per cent. preference unchanged at 111. London Transport stocks came in for increased attention on the view that, having regard to the constitution of the L.P.T.B., it is unlikely to be affected by any nationalisation proposals involving the main-line companies. London Transport "C" rallied well from 60½ to 62½, and the "A" and "B" stocks were also higher.

Until the Government's intentions are known it may, of course, be only prudent to regard junior stocks of the main-line railway companies as more of a speculation than an investment, although there may be scope for satisfactory appreciation, bearing in mind the large yields still ruling. On the other hand, senior preference stocks and higher ranking stocks remain high-class investments. Fair compensation is promised in regard to possible nationalisation developments, and it can be expected confidently that the railway companies will do everything possible to see that the rights of stockholders are protected in any developments that may lie ahead.

Argentine railway securities attracted rather more attention, particularly debenture stocks, but generally movements have been moderate. Buenos Ayres Great Southern was maintained at 11¼, and the 4 per cent. debentures strengthened to 66, although there was a fractional decline to 26 in the 5 per cent. preference. Argentine Great Western 5 per cent. debentures at 60 lost an earlier gain, but Buenos Ayres & Pacific 4½ per cent. consolidated debentures improved to 59½ and the 5 per cent. debentures to 30½. Central Uruguay issues reacted; the second debentures at 26½ lost part of an earlier rise. Leopoldina 4 per cent. debentures were better at 53½. San Paulo ordinary firmed up to 54½, but Nitrate Rails further reacted to 70s. although Antofagasta ordinary was better at 9¾. Canadian Pacifics eased to 19⅛. Demand developed for Bahia Blanca stocks raised prices; the 4 per cent. debentures improved to 64, the guaranteed stock to 61 and the second debentures to 62.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1943/4	No. of Weeks	Aggregate traffics to date: Totals 1944/5	Aggregate traffics to date: Totals 1943/4	Aggregate traffics to date: Increase or decrease	Shares or Stock	Prices: Highest 1944	Prices: Lowest 1944	Prices: August 21, 1945	Yield % (See Note)
				£	£		£	£	£					
South & Central	Antofagasta (Chili) & Bolivia	834	12.8.45	20,810	– 7,560	32	960,790	916,960	+ 43,830	Ord. Stk.	13¼	9¼	10	Nil
	Argentine North Eastern ...	753	11.8.45	19,037	+ 1,500	6	116,812	103,644	+ 13,168	,,	6¾	4½	8	Nil
	Bolivar	174	July, 1945	4,127	– 780	30	34,402	36,663	– 2,261	6 p.c. Deb.	18¾	7½	8½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	19⅞	15	23	Nil
	Buenos Ayres & Pacific ...	2,771	4.8.45	126,125	+ 7,812	5	607,812	584,312	+ 23,500	Ord. Stk.	7½	3¾	5¾	Nil
	Buenos Ayres Great Southern	5,080	11.8.45	190,437	+ 17,000	6	1,145,187	1,063,625	+ 81,562	Ord. Stk.	14⅝	9¾	11¼	Nil
	Buenos Ayres Western ...	1,924	11.8.45	68,000	+ 4,563	6	406,750	384,937	+ 21,813	,,	13¼	9½	11¼	Nil
	Central Argentine	3,700	11.8.45	198,228	+ 22,184	6	1,122,816	1,077,731	+ 45,085	,,	10½	6⅝	8¼	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4¾	3	4	Nil
	Cent. Uruguay of M. Video	972	4.8.45	38,082	+ 5,156	5	185,109	175,853	+ 9,256	Ord. Stk.	5½	4	6	Nil
	Costa Rica	262	June, 1945	36,024	+ 12,773	42	295,175	274,930	+ 20,245	Stk.	17½	14½	14	Nil
	Dorada	70	July, 1945	31,960	+ 3,579	30	214,335	177,690	+ 36,645	1 Mt. Deb.	101	101	101½	£5 18/3
	Entre Rios	808	11.8.45	29,419	+ 4,294	6	163,569	145,813	+ 17,756	Ord. Stk.	6½	4½	5½	Nil
	Great Western of Brazil ...	1,030	11.8.45	20,900	+ 800	32	787,500	692,800	+ 94,700	Ord. Sh.	38/–	23/3	25/–	Nil
	International of Cl. Amer. ...	794	June, 1945	$218,345	+ $102,796	22	$1,266,065	$1,208,112	+ $57,953	—	—	—	—	—
	Interoceanic of Mexico ...	—	—	—	—	—	—	—	—	1st Pref.	1⅛	¼	1	Nil
	La Guaira & Caracas... ...	22½	July, 1945	6,361	– 2,149	30	43,290	54,940	– 11,650	5 p.c. Deb.	88	79	76½xd	£6 7/5
	Leopoldina	1,918	11.8.45	62,751	+ 13,689	32	1,585,763	1,446,862	+ 138,901	Ord. Stk.	5⅛	4¼	4	Nil
	Mexican	483	7.8.45	ps. 587,400	+ ps. 128,200	5	ps. 3,433,300	ps. 2,737,300	+ ps. 696,000	Ord. Stk.	¼	⅛	1¼	Nil
	Midland Uruguay	319	June, 1945	21 830	+ 6,402	52	217,882	203,238	+ 14,644	—	—	—	—	—
	Nitrate	382	15.8.45	7,819	– 794	32	111,795	119,248	– 7,453	Ord. Sh.	75/10	65/10	70/–	£3 11/5
	North Western of Uruguay	113	June, 1945	4,575	– 2,189	52	66,965	91,572	– 24,607	—	—	—	—	—
	Paraguay Central	274	10.8.45	£71,280	+ £22,866	6	£397,670	£333,698	+ £63,972	Pr. Lt. Stk.	79½	68	77½	£7 14/10
	Peruvian Corporation ...	1,059	July, 1945	134,750	+ 16,110	4	—	—	—	Pref.	9	10	9¼	Nil
	Salvador	100	June, 1945	c 91,000	+ c 11,000	52	c 1,511,000	c 1,484,000	+ c 27,000	—	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	57¾	46	54½	£5 10/1
	Taltal	156	July, 1945	1,785	– 30	4	—	—	—	Ord. Sh.	21/3	13/9	13/9	Nil
	United of Havana	1,301	11.8.45	41,545	– 8,934	6	265,416	287,691	– 22,275	Ord. Stk.	4	2¼	2	Nil
	Uruguay Northern	73	June, 1945	1,464	– 52	52	19,568	17,929	+ 1,639	—	—	—	—	—
Canada	Canadian National	23,569	June, 1945	1,869,600	+ 182,600	26	7,879,600	8,196,600	– 317,000	—	—	—	—	—
	Canadian Pacific	17,028	14 8.45	1,296,200	+ 83 800	32	39,276 800	38,773,000	+ 503 800	Ord. Stk.	17¾	13⅛	19	2⅛
Various	Barsi Light †	202	June, 1945	19 620	– 4,185	14	74,595	75.487	– 892	Ord. Stk.	129½	97½	129½	£3 9/6
	Beira	204	June, 1945	80,259	– 11,581	42	—	—	—	—	—	—	—	—
	Egyptian Delta	607	10.7.45	16,317	— 2,418	13	161.765	186.144	– 24.379	Pri. Sh.	7½	5¼	6½	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	63½	58	62½	Nil
	Midland of W. Australia ...	277	June,, 1945	11,866	– 8 048	52	219.103	332,901	– 113.798	Inc. Deb.	101½	99½	95½	£4 3/9
	Nigeria	1,900	26.5.45	277,630	+ 23,531	8	1,823,785	1,739,068	+ 84,717	—	—	—	—	—
	Rhodesia	2,445	June, 1945	522,625	– 40,423	42	—	—	—	—	—	—	—	—
	South Africa	13,301	7.7.45	1,063,115	+ 100.268	14	13,763,850	11,930.632	+ 1,833.218	—	—	—	—	—
	Victoria	4,774	April, 1945	1 285,324	+ 96,325	–	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current price and are within a fraction of ½. Argentine traffics are given in sterling calculated @ 16 pesos to the £.

† Receipts are calculated @ 1s. 6d. to the rupee